EXTender 1100A Switch and Remote Module System Administrator's Guide

Document Number: M-1100A-MUC **Version: Rev AG**

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Symbols and Conventions

Important symbols and conventions used throughout this guide are shown below.

Icon	Description
	Important safety information. Ignoring this information may lead to physical danger to people.
	Information alerting you to potential loss of data or damage to an application, system or device.
	Highlights important information.

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▫ **Web**	www.citel.com	
▫ **Telephone**	+1 877 248 3587 – select the support option	

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Products

The information contained within this document refers to the following products:

Part Number (North America)	Description
E-1100A-SUC	EXTender 1100A Switch Module
E-1100A-RUC	EXTender 1100A Remote Module
Part Number (European Union)	**Description**
E-1100A-SUC41	EU EXTender 1100A Switch Module
E-1100A-RUC41	EU EXTender 1100A Remote Module

Table 1: Product Part Numbers

Terms and Conventions

1. The EXTender 1100A Switch Module is a single-user communications device and is referred to as the Switch.
2. The EXTender 1100A Remote Module is a single-user communications device and is referred to as the Remote.
3. The Management Console is the programming interface that is accessed through the PC's communications port and is referred to as the MC.
4. The Management Browser is the programming interface that is accessed through a Web Browser and is referred to as the MB.
5. The Remote Telephone Management Interface this is accessed through the digital telephone using the LCD phone display is referred to as the TMI.
6. The corporate PBX (Private Branch Exchange), KTS (Key Telephone System) or KSU (Key Service Unit) is the phone system currently used by the client. For simplicity, they will all be referred to as the PBX.

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Safety Information

WARNING - IMPORTANT SAFETY INSTRUCTIONS

1. Read and make sure you understand all warnings and instructions, including those marked on the product.
2. Do not install this product near water. For example in a wet basement location.
3. Do not install this product, or associated wiring, during a lightning storm.
4. Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
5. Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not place this product where anyone can step on the cord.
6. Do not touch non-insulated wires or terminals unless the telephone wiring has been disconnected at the network interface.
7. Unplug the product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid or aerosol cleaners.
8. Do not operate the system if a chemical or gas leakage is suspected in the area. Use a telephone located in another safe area to report the trouble.
9. The AC/DC adaptor must only be used in an easily accessible outlet.
10. Do not open the Switch Module or Remote Module. There are no user-serviceable parts inside. Only an authorized technician should open the unit for required maintenance or upgrading purposes.

Power Surges

Sudden surges in electrical current can damage sensitive equipment. To reduce the risk of damage to your equipment caused by lightening strikes, for example, install a surge protector between your equipment and both the AC power outlet, as well as, the telephone line.

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1 OVERVIEW

What is the EXTender 1100A Switch Module and Remote Module?

The 1100A Switch and Remote Module is a single-user telephony device providing remote teleworkers with seamless connectivity to the corporate PBX and all of the associated functionality. The Switch Module connects to the PBX and the Remote Module connects to a digital telephone at the remote site. Teleworkers, working from an off-site location, can place or receive calls through the corporate PBX as if they were at the main office.

What does it do?

Citel Technologies EXTender products allow workers at branch offices or home offices to interact with the corporate PBX as if they were on-site. A simple analog phone line, along with the Switch and Remote Modules, will deliver the voice path and telephony features over the PSTN network to the corporate head office. The physical location of the worker will be completely transparent.

How does it do that?

The digital telephone connects to the Remote Module via an RJ-45 telephone jack and the telephone traffic is sent out of the PSTN connection to a Switch Module at the corporate office.

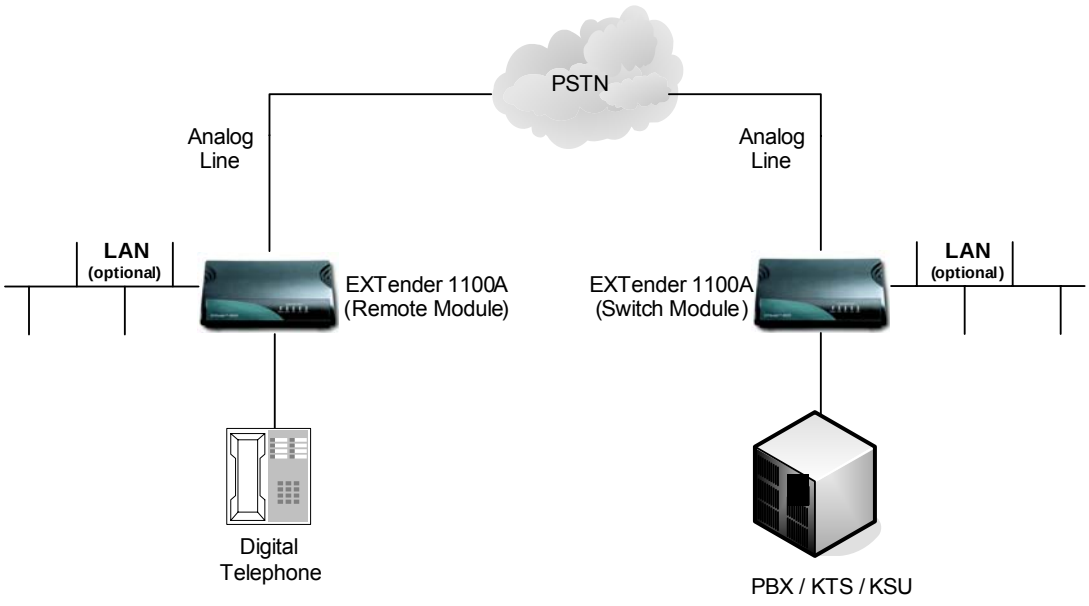

Figure 1: Connection Diagram

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Compatible products

Supported EXTender products (North America):

EXTender 1100A Switch Module
EXTender 1100A Remote Module
EXTender 1000U and 1000PLUS Switch Module (North America only. Definity, Norstar and Meridian only – PBXextender rack cards also supported)
EXTender 1000U and 1000PLUS Remote Module (North America only. Definity, Norstar and Meridian only)
PBXgateway II with 12/24 port Mapletree Modem Card (North America only. Definity and Meridian only, V2.1x)

Supported PBXs/KTSs/KSUs:

Avaya:

Definity	R011i.02.0.110.4
Magix	Release 2.0, V9.0

Nortel:

Meridian Opt11c	R25 Version 2111 Issue 40
Norstar BCM4.0	V4.0.2.03a
Norstar MICS7.1	30DEC12 NAT (V3.12)

Supported Phone Types:

Avaya (refer to Table 11: Supported Telephones – Definity and Magix)
Nortel Meridian (refer to Table 12: Supported Telephones – Nortel Meridian)
Nortel Norstar (refer to Table 13: Supported Telephones – Nortel Norstar)

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What's in the box?

EXTender 1100A Switch Module:

Switch Module (1)
Citel System Administration CD (1)
Release Notes – if required (1)
Universal Power Supply A-PUNIV-1 (1)
Power Cord (1)
RJ45ST Patch Cable (1)
RJ45 to DB9 RS232 Cable (1)
RJ45 to RJ11 Digital Phone Cable (1)
RJ11 to RJ11 Telco Line Cable (1)

EXTender 1100A Remote Module:

Remote Module (1)
Citel System Administration CD (1)
Release Notes – if required (1)
Universal Power Supply A-PUNIV-1 (1)
Power Cord (1)
RJ45ST Patch Cable (1)
RJ45 to DB9 RS232 Cable (1)
RJ45 to RJ11 Digital Phone Cable (1)
RJ11 to RJ11 Telco Line Cable (1)

More information

EXTender 1100A Switch Module Quick Installation Guide
EXTender 1100A Remote Module Quick Installation Guide
EXTender 1100A Switch Module Quick Reference Guide
EXTender 1100A Remote Module Quick Reference Guide

Information on training can be obtained from training@citel.com

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2 PLANNING AND PREREQUISITES

You should read the information in this chapter before starting the installation process as you may need to obtain some information or make some changes that could be difficult when on site.

Do NOT connect the Switch Module to the PBX or connect the digital telephone to the Remote Module until the Setup Wizard has been run. An improperly configured Switch Module can disable or damage the PBX line card and an improperly configured Remote Module can cause damage to the digital telephone set.

You Need to Check

1. Which model of PBX is used at the corporate site
2. Which digital telephones at the remote location will be communicating with the Switch Module ports
3. Where the Switch Module and Remote Module will be physically located
4. Access to the power to be supplied to the Switch Module and Remote Module
5. The Switch Module (at the corporate site) and the Remote Module (at the branch office) must be installed properly and the PSTN lines for both devices must be operational
   a) A functioning analog line must be connected to the Switch Module
   b) A functioning analog line must be connected to the Remote Module
6. Power and Wiring
   a) The system is designed to operate at 120-240V AC. Do not apply power to the Switch Module or Remote Module until you are instructed to do so in the installation procedure.
   b) Install the Switch Module or Remote Module power supply and cabling away from high power/high RF noise devices such as computers, fans, fluorescent ballasts and power supplies
   c) Use good wiring practices. Do not run wires over fluorescent lights, computers, air conditioners, etc., as this can introduce noise.
   d) The distance between the Switch Module and the PBX it is to be connected to should not exceed 500 feet (150 meters)
   e) Ensure that the power supply is within 5 feet (1.5 meters) of the Switch Module and the Remote Module

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You Need to Know

1. The telephone numbers of the analog lines connected to the Switch and Remote Modules
2. A User ID to be used for Switch Module and Remote Module connection.
3. IP Settings (for configuring the units remotely, this is optional):
   a) **Address** – This is the IP address of the Switch Module (another unique address is also required for the Remote Module)
   b) **Subnet Mask** – A number used to identify the IP subnet on the LAN
   c) **Default Router** – The address of a device used to reach IP hosts not on this IP sub-network
4. The unique device names to be used for identifying the Switch Module and Remote Module, Seattle Office, New York Office, for example
5. The model number and release of the PBX in use at the corporate site
6. Corporate guidelines for password configuration and implementation
7. The companding setting (aLaw – Europe, uLaw North America)
8. Any special needs or specific user requirements

You Need to Have

1. All of the items provided in the box with the Switch Module and Remote Module (see *What's in the box?* on page 11)
2. A copy of the latest software version available for the Switch Module and Remote Module (if performing a software upgrade)
3. Mounting screws and screw driver (if wall mounting is required)
4. Access to supported PBX ports
5. A PC or Laptop computer to connect to the Remote Module with the following capabilities:
   a) A serial port
   b) A network port (optional)
   c) A terminal emulator such as Windows HyperTerminal for accessing the Switch Module and Remote Module Management Console (MC)
   d) Microsoft Internet Explorer 5.x or later for configuring the Switch Module and Remote Module via the Management Browser (optional configuration method)
6. A Digital telephone with a LCD display. An alternative way to configure the Remote Module once the protocol is selected.

You Need to Point Out

If a user dials emergency services from the remote location when the telephone is connected to the Remote Module and linked to the Switch Module they will reach the emergency facility that serves the location of the PBX and ***not*** the location of the Remote Module. To ensure that you reach the correct emergency service for your area, use a telephone connected locally.

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3 INSTALLING THE SWITCH MODULE AND REMOTE MODULE

Before handling or operating the Switch Module and Remote Module make sure that the cover is correctly secured to the base of the unit – hazardous voltages are present inside.

Do not attempt to modify the Switch Module or Remote Module hardware.

Installation Diagram

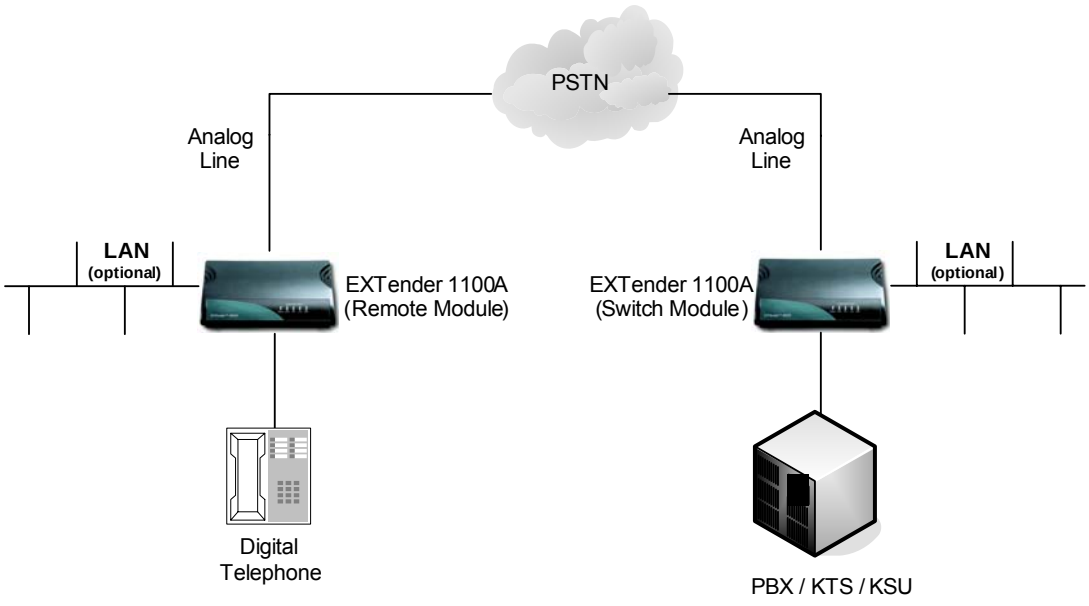

Figure 2: Installation Diagram

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Physical Installation

Switch Module (right side of Figure 2 – previous page):

1. Place the unit in the destination location. The Switch Module can either be wall mounted or placed on any desktop.
2. Connect the supplied RJ-45 to DB-9 Console cable between the console (COMM) port and a PC communications (COM) port.
3. Prepare to connect the supplied RJ-45 to RJ-11 cable between Port on the rear of the Switch Module and a port on the PBX. Do NOT connect to the PBX until the Setup Wizard has been run.
4. Connect the LAN port to the LAN with an RJ-45 cable (optional configuration method).
5. Connect the supplied RJ-11 to RJ11 cable between the analog line provided by the PSTN to the Telco port on the rear of the Switch Module.

Do not apply power to the units until instructed to do so. An improperly configured Switch Module or Remote Module can cause damage to the units, telephone sets or PBX line cards.

Remote Module (left side of Figure 2 – previous page):

1. Place the unit in the destination location. The Remote Module can either be wall mounted or placed on any desktop.
2. Connect the supplied RJ-45 to DB-9 Console cable between the console (COMM) port and a PC communications (COM) port.
3. Prepare to connect the supplied RJ-45 to RJ-11 cable between the Phone port on the rear of the Remote Module and a supported digital set. Do NOT connect a telephone until the Setup Wizard has been run.
4. Connect the LAN port to the LAN with an RJ-45 cable (optional configuration method).
5. Connect the supplied RJ-11 to RJ11 cable between the analog line provided by the PSTN to the Telco port on the rear of the Switch Module.

Do not apply power to the units until instructed to do so. An improperly configured Switch Module or Remote Module can cause damage to the units, telephone sets or PBX line cards.

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Removal

Refer to the instructions below when moving or removing the Switch Module and/or Remote Module.

1. Power down the units
2. Disconnect the RJ-11 to RJ-11 Telco Phone Cable between the analog line and the Telco port
3. Disconnect the RJ-45 from the LAN port
4. Disconnect the RJ-45 to RJ-11 cable between Port and a port on the PBX (Switch Module)
5. Disconnect the RJ-45 to RJ-11 cable between the Phone port and a supported digital set (Remote Module)
6. Disconnect the RJ-45 to DB-9 Console cable between the console port and the PC communications (COM) port
7. Remove the unit(s) from the desktop or wall (if mounted)

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4 CONNECTING TO THE SWITCH MODULE AND REMOTE MODULE

This chapter provides information for connecting to the Switch Module and the Remote Module. The Switch and Remote units' Management Console (MC) and/or Management Browser (MB) can be accessed with a PC or terminal connected. The Remote unit's Telephone Management Interface (TMI) can be accessed via the Digital phone.

A generic VT100 ETI application is needed to communicate with the Switch Module and/or Remote Module (this document will refer to examples using Microsoft HyperTerminal).

Management Console

The Management Console provides access to a full configuration and diagnostic and command structure.

Direct Serial Connection

This section describes connecting to the Management Console using Microsoft HyperTerminal. You may use a different terminal application if you are familiar with its use.

Only use the commands listed and described in this document unless otherwise instructed by Citel Technologies. Incorrect command use may prevent use of the Switch Module and Remote Module.

1. Start a HyperTerminal session.
   a) On a default installation of Windows XP, for example, from the **Start** menu select **Programs**, **Accessories**, **Communications** and finally **HyperTerminal**.
2. Enter a name for the new connection in the Name box: for example, Switch (or Remote).
3. Select the COM port you are using from the options in the Connect drop-down list.
4. Check the configuration of the communications port and make sure the settings are as follows:

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

5. Plug the power supply in to the Switch Module and/or Remote Module and allow it to complete the boot sequence.

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Do NOT connect the Switch Module to the PBX or connect the digital telephone to the Remote Module until the Setup Wizard has been run. An improperly configured Switch Module can disable or damage the PBX line card and an improperly configured Remote Module can cause damage to the digital telephone set.

6. Wait a few seconds and the "Press 'Enter' to start the shell..." prompt is displayed.
7. Press Enter. There is no default password (a password prompt will be displayed if a password is set).

If the Switch Module or Remote Module software is running but you do not see these prompts, the serial connection between your computer and the units may be at fault. You must correct this problem before you can use the HyperTerminal connection successfully. See *Direct Serial Connection* on the previous page.

8. Type the unit's password, if one is set, and press Enter.
9. The Console UI welcome screen is displayed (see *Figure 3* below)
10. To be sure that you can see all the information displayed, you must set the screen size to 24 lines x 80 columns.
11. The screen size is correctly set when the Welcome screen is displayed with the # border, as shown in *Figure 3*.

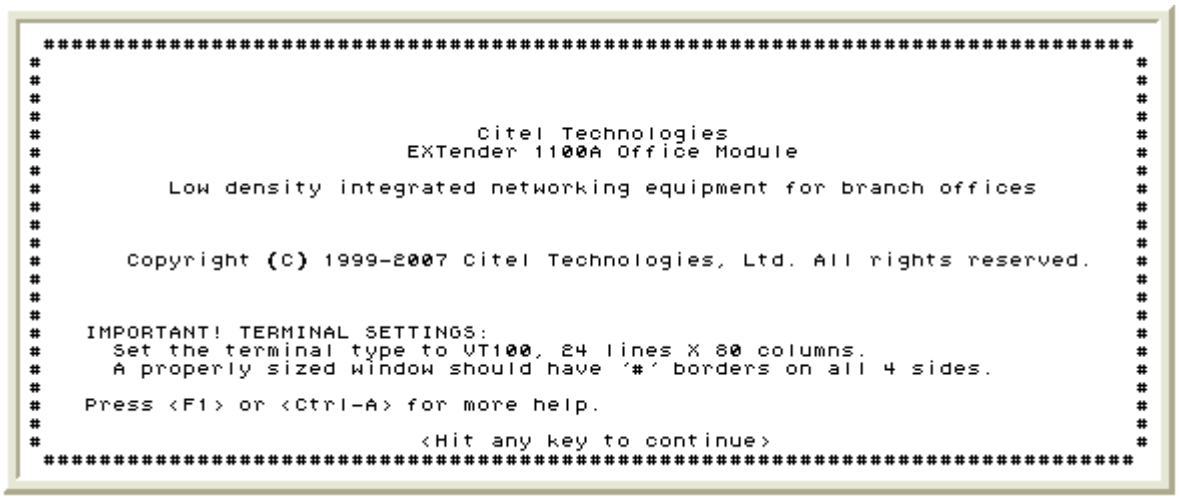
Citel Technologies
EXTender 1100A Office Module
Low density integrated networking equipment for branch offices
Copyright (C) 1999-2007 Citel Technologies, Ltd. All rights reserved.
IMPORTANT! TERMINAL SETTINGS:
Set the terminal type to VT100, 24 lines X 80 columns.
A properly sized window should have '#' borders on all 4 sides.
Press <F1> or <Ctrl-A> for more help.
<Hit any key to continue>

Figure 3: The Switch Module Console UI – Welcome Screen

Using your mouse, click, hold and drag the corner of the screen until you can see the # border, then release your mouse button.

The Welcome Screen for the Remote Module is the same except it will display "Citel Technologies, EXTender 1100A Remote Module"

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Hints for Making a Successful Connection

1. Check that the cable being used is a straight-through cable, as supplied with the Switch Module and Remote Module.
2. Exit and then restart HyperTerminal.
3. Connect using a different COM port on your computer.
4. Reboot your computer and then restart HyperTerminal.
5. The Switch Module and Remote Module Management Console password is not set by default.
6. It's strongly recommended that a password be set for security reasons. See *Changing Passwords* for instructions.
7. Make a note of the password and pass it to the system administrator.

If the unit's password is lost or forgotten please contact a customer support representative at 1-877-248-3587 or support@citel.com for details on how to reset the password. Individual port passwords are not affected.

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Using the Management Console

The Welcome screen is displayed automatically when you connect to the Switch Module and Remote Module using a serial cable. You must make sure that your terminal window is sized so that you can see the border of # symbols around the contents.

Press any key to enter the console menu system. Menu options are selected using the PC cursor keys: use the up and down keys to move within a menu or list of options, use the left and right keys to return to a higher level menu or to access sub-menus (as described in the *Command Keys* section on the next page).

The Console Interface

A typical screen from the console interface is shown in *Figure 4* below.

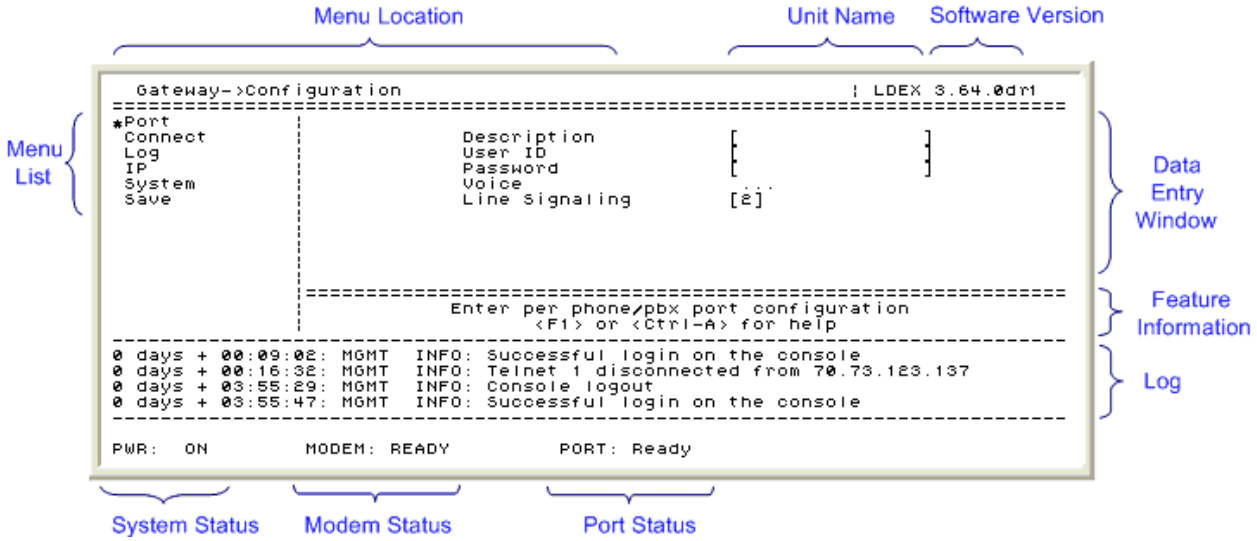

Figure 4: The Console Interface

1. **Menu Location** - Your current location within the menu system – in the example, you are in the Configuration menu on the Switch Module.
2. **Unit Name** - Typically used to identify the unit by its location (user configurable).
3. **Software Version** - The version of software currently installed.
4. **Menu List** - The options available within the current menu. The asterisk indicates your current location ("Port" is highlighted in *Figure 4*, for example).
5. **Data Entry Window** - The area of the screen where configuration details are entered. In this example, this is the Port configuration menu.
6. **Feature Information** - A short description and/or brief instructions on the current menu item.
7. **Log** - An area that displays the four most recent lines from the log. Primarily used for trouble shooting. A customer support representative will instruct the Administrator on the use of this feature should the need arise.
8. **System Status** - Power indication message.
9. **Modem Status** – Provides connect status of the Modem during connection attempts
10. **Port Status** – Provides live information on the status of the individual ports.

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Command Keys

The Management Console (MC) uses command keys and cursor keys to navigate through the sub-menus:

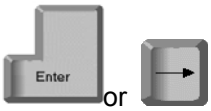
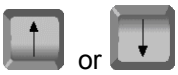
Key	Description
	Cancel, leaving values at their previous settings.
	Accepts the change you have entered or exits the current menu option. The Administrator will also be prompted to save configuration changes if required.
	Access the currently selected menu item.
	Go to an item in a menu. You can also select a menu item by typing the first character in its name ("p" for Port, for example).
	Help screen. This help screen is for the UI itself and not for the features listed within the UI.
	Refreshes the current screen.

Table 2: Command Keys

Saving Changes

You will be prompted to save if you attempt to log out of the Management Console when changes have been made. You will also be asked to confirm that you want to save changes if you select the Save option. You may need to reboot the Switch Module or Remote Module for your changes to take effect depending on the menu item programmed.

Logging Out

When you have finished working in the Management Console, remember to logout.

If you have left FTP enabled, a warning message is displayed reminding you to disable FTP access. You can choose to logout anyway, but leaving FTP access enabled is not recommended. If FTP is disabled, a message is displayed asking you to confirm that you want to log out of the Management Console.

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Telnet Connection

The Management Console for the Switch Module and Remote Module can also be accessed using a telnet session. The units have default IP parameters which can be utilized for connection and initial configuration.

Default IP Address: 10.0.0.10

Default Subnet Mask: 255.0.0.0

1. On a PC running Microsoft Windows go to Network Connections and change the settings on the Internet Protocol (TCP/IP) Properties. Click on "Use the following IP address" button and enter an IP address of 10.0.0.11 and a subnet mask of 255.0.0.0.
2. Connect the Switch Module or Remote Module directly to the PC via a crossover LAN cable, or indirectly through a hub using LAN cables.
3. Telnet to the unit's address of 10.0.0.10 through the VT100 Terminal emulator (HyperTerminal) and begin configuration (see *Configuring the Switch Module and Remote Module*). *Or*,
4. Go to the Microsoft Windows "Run" application, enter "Telnet" followed by the default address of 10.0.0.10 and hit enter. The Welcome Screen is displayed (see *Figure 3*).
5. Enter the MI Configuration menus to configure a valid IP address and subnet mask, when you save the changes you will be prompted to restart the Module.
6. Once restarted ensure that the Switch Module and Remote Module's LAN cable is re-connected to the network router.
7. On the PC go back to Internet Protocol (TCP/IP) Properties and click on the "Obtain an IP address automatically" button to put the PC's IP info back to its original state.

Note: A maximum of two Telnet connections can be made to each unit at any one time (not recommended due to configuration conflicts that may arise with two administration sessions being performed at the same time).

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Management Browser

Connecting to the Management Browser

The Switch Module and Remote Module can also be configured using a web based interface when running Windows Internet Explorer 5.x or later. Prior to configuring through the Management Browser, a valid IP address must first be assigned to the units and the Web server must also be enabled. To configure the unit's IP address and Management Browser settings refer to *Direct Serial Connection* or *Telnet Connection*.

The Switch Module and Remote Module Management Browser uses JavaScript and Cascading Style Sheets (CSS), therefore, you must enable JavaScript to obtain all the functions described in this document. If you disable Cascading Style Sheets, the functions will still work, although the appearance will differ.

Enabling the Management Browser

The Web Server feature must first be enabled in order to administer the units with this method. The configuration screen to enable the Management Browser is shown below:

Path: Gateway (and Remote) ->Configuration->IP->LAN

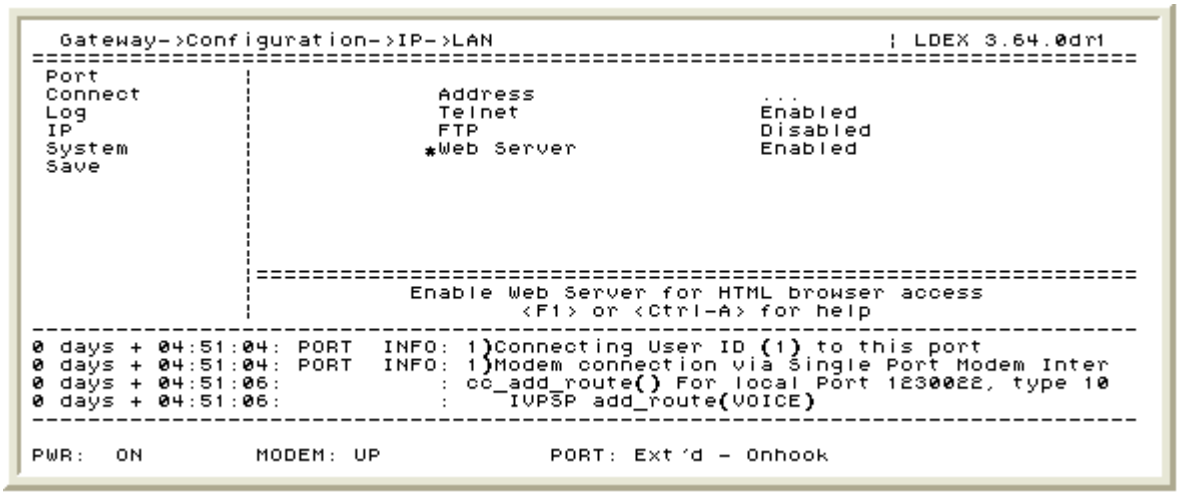
Gateway->Configuration->IP->LAN
LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
Address ...
Telnet Enabled
FTP Disabled
*Web Server Enabled
Enable Web Server for HTML browser access
<F1> or <Ctrl-A> for help
0 days + 04:51:04: PORT INFO: 1)Connecting User ID (1) to this port
0 days + 04:51:04: PORT INFO: 1)Modem connection via Single Port Modem Inter
0 days + 04:51:06: : cc_add_route() For local Port 1830088, type 10
0 days + 04:51:06: : IVPSP add_route(VOICE)
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 5: Enabling the Web Server

1. Enabling the **Web Server** – In order to configure the units using the Management Browser the Web Server must first be set to "Enabled."

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Configuring the Management Browser Parameters

Additional Management Browser (MB) parameters can also be configured either prior to launching the MB or any time after. The MB parameters screen is shown below:

Path: Gateway (and Remote Module) ->Configuration->IP

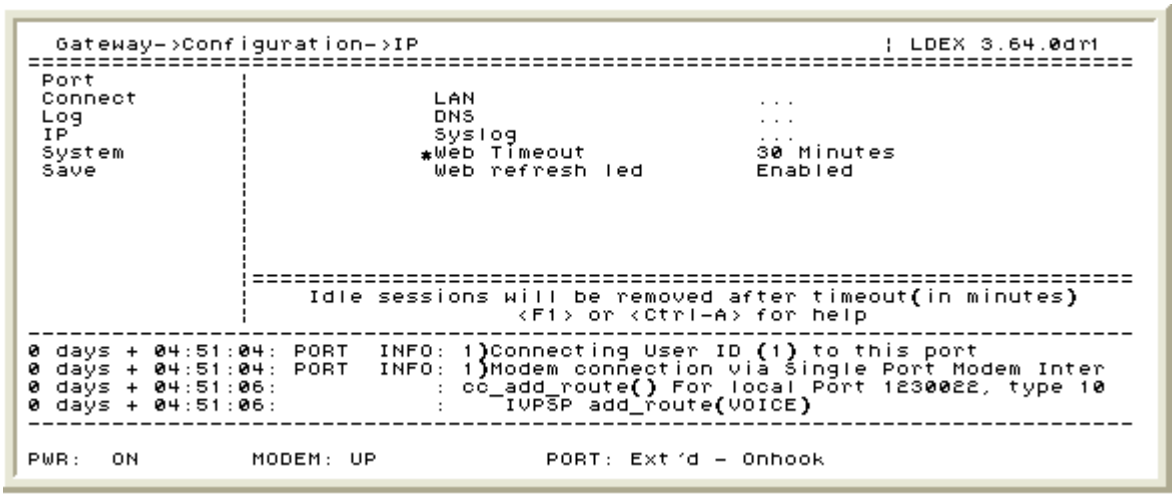
Gateway->Configuration->IP
LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
LAN ...
DNS ...
Syslog ...
*Web Timeout 30 Minutes
Web refresh led Enabled
Idle sessions will be removed after timeout(in minutes)
<F1> or <Ctrl-A> for help
0 days + 04:51:04: PORT INFO: 1)Connecting User ID (1) to this port
0 days + 04:51:04: PORT INFO: 1)Modem connection via Single Port Modem Inter
0 days + 04:51:06: : cc_add_route() For local Port 1830022, type 10
0 days + 04:51:06: : IVPSP add_route(VOICE)
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 6: Management Browser Parameters

1. Setting the **Web Timeout** – For security purposes, this parameter determines the amount of time a MB screen can be left idle (no programming activity) before terminating the session. The timeout can be set for 30 minutes, 1, 2 or 3 hours or Never (not recommended).
2. Enabling the **Web Refresh LED** – The graphical representation of the Switch Module and Remote Module will update the Port Status LED (see below) every 10 seconds. The administrator will receive the most up to date status of the port. If the frequent updates are found to be a hindrance during programming the LED refreshing can be disabled (***Path:*** Gateway (and Remote) ->Configuration->IP->Web refresh led).

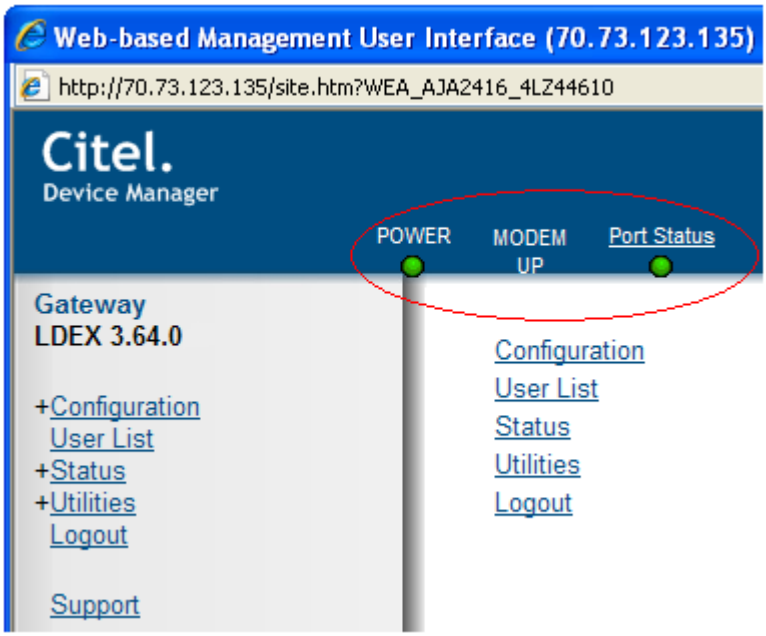

Figure 7: Management Browser Parameters

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Using the Management Browser

To access the Switch Module or Remote Module through the Management Browser open a Microsoft Internet Explorer session and enter the unit's IP address in the Address field of the web browser. The Management Browser Welcome Screen is presented (see below).

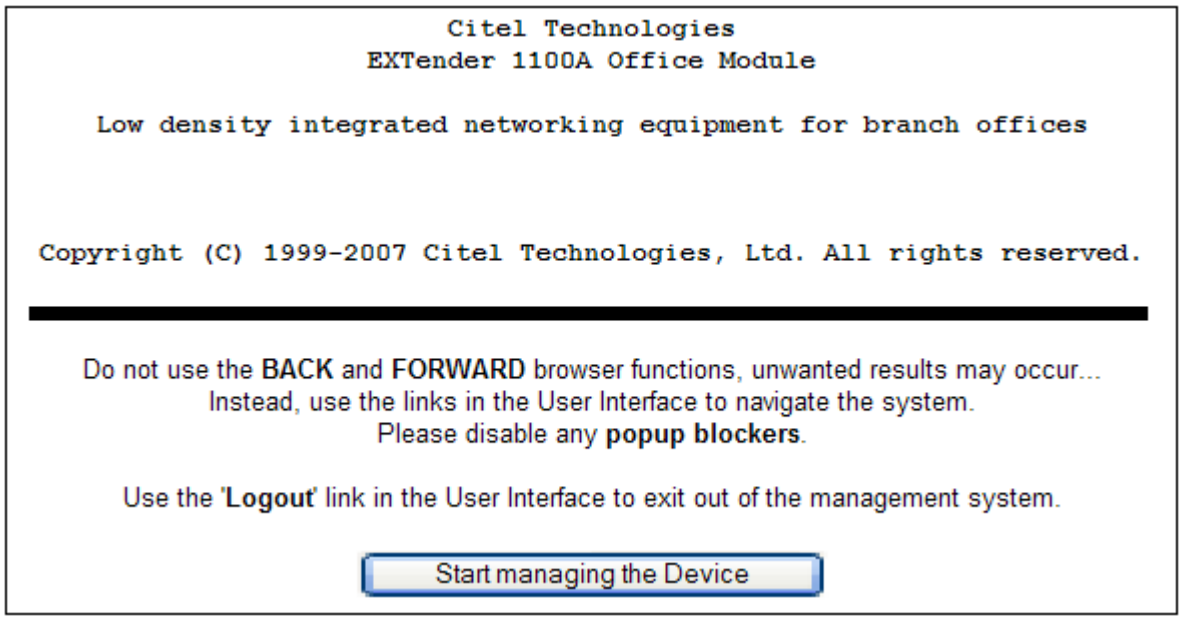
Citel Technologies
EXTender 1100A Office Module
Low density integrated networking equipment for branch offices
Copyright (C) 1999-2007 Citel Technologies, Ltd. All rights reserved.
Do not use the BACK and FORWARD browser functions, unwanted results may occur...
Instead, use the links in the User Interface to navigate the system.
Please disable any popup blockers.
Use the 'Logout' link in the User Interface to exit out of the management system.
Start managing the Device

Figure 8: The Management Browser Welcome Screen

Important instructions on the use of the Management Browser should be read and fully understood before continuing to configure the units.

Click on the "Start managing the Device" button and a graphical representation of the Switch Module or Remote Module, is displayed (see below).

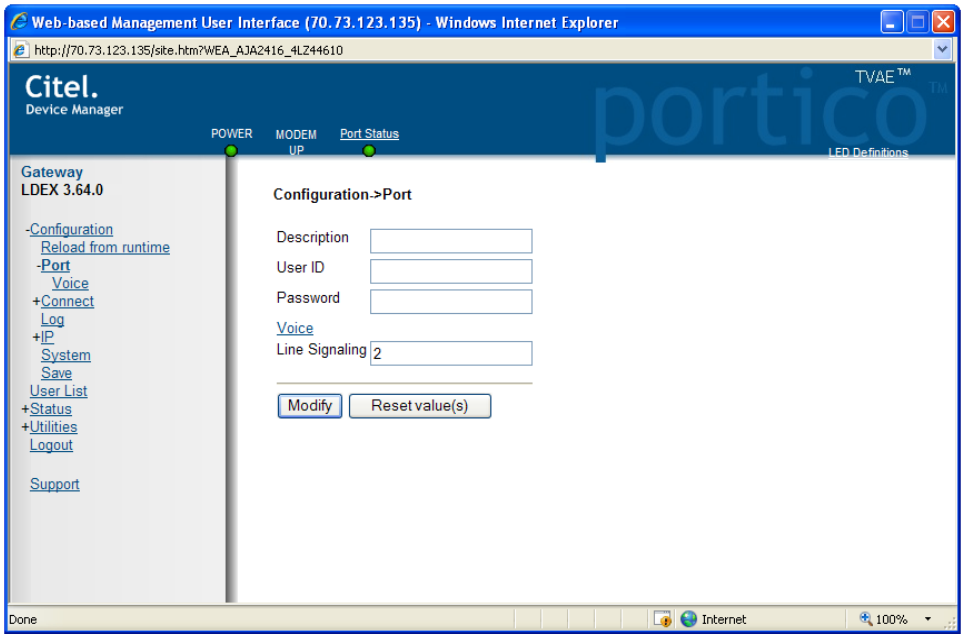

Figure 9: The Management Browser configuration screen

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Remote Module Telephone Management Interface

The Telephone Management Interface (TMI) can also be used for setting the configuration parameters for the 1100A Remote Module using a digital telephone with a display. For ease of use it is recommended that a telephone with a two-line display be utilized for any telephone MI programming.

You must set the PBX type, in the Console Setup Wizard, before being able to use the Remote Module TMI.

Below is a summary of the TMI Menu structure:

Set Configuration

- **Connect Menu**
- **Modem Menu**
- **IP Menu**
- **Console baud**
- **Country Code**
- **Connect Parameters**

View Configuration Info

- **Connect Info**
- **IP Info**

View System Info

Diagnostics Info

- **View Diagnostics**
- **Initialize Modem**

Restart Unit

Accessing the Phone Telephone Management Interface

Press the "Hold" key on the telephone four times. This can be done while offline or online (Extended)

Menu Legend

Navigating through the telephone interface menus is done using the keypad on the telephone or soft menu keys below the LCD display (if the telephone is equipped with Soft menu keys). The menu legend shows each applicable numeric key and the screen or command to which it corresponds in the interface.

Prv/Prev	**= 1** (left most soft key) on the telephone keypad:	*Previous Screen*
Ok	**= 2** (middle soft key) on the telephone keypad:	*Accept changes/enter menu*
Nxt/Next	**= 3** (right most soft key) on the telephone keypad:	*Next Screen*

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Remote Module Offline Phone Menu Map

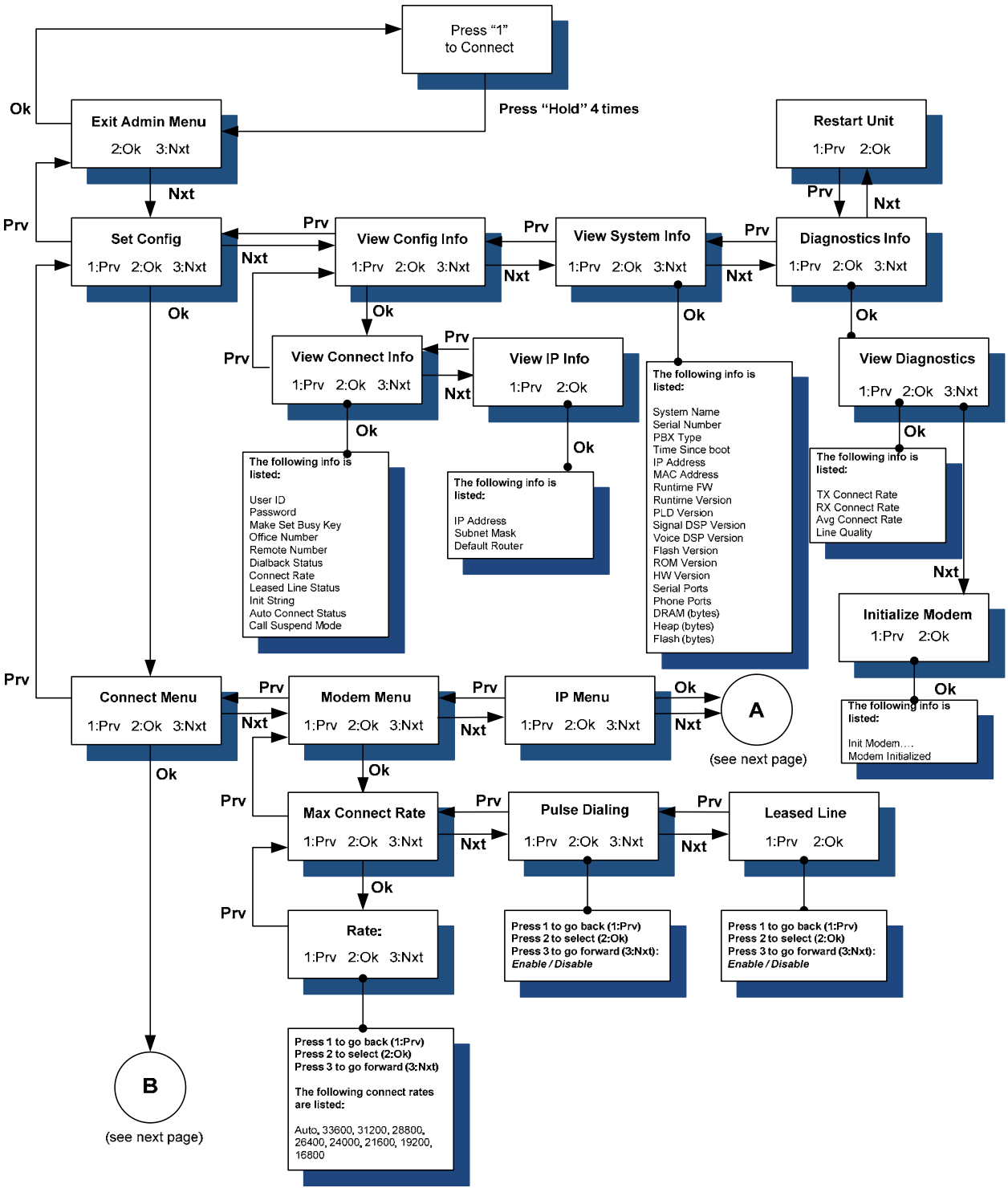

Figure 10: Offline Phone Menu Map - page 1

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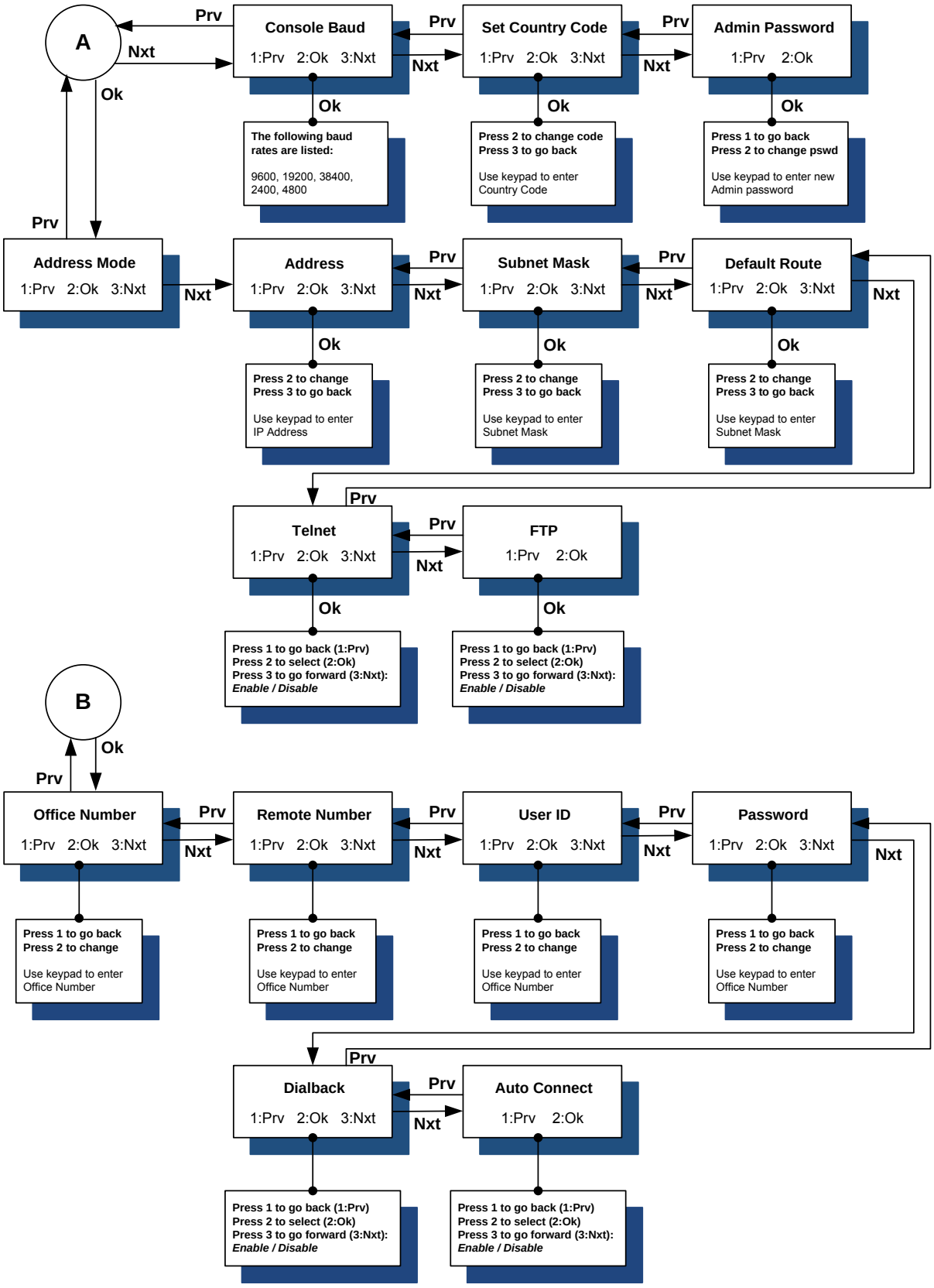

Figure 11: Offline Phone Menu Map – page 2

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Saving Configuration Changes

If you have made any configuration changes using the TMI you will need to save these changes.

To save changes press the **Prv** key until you see the "Save Changes?" phone menu. This menu should be displayed after the Connect Menu only if any of the current configuration items have changed, otherwise the "Set Config" menu will be displayed.

When the "Save Changes?" is displayed you can:

- **Press Ok key and the changes will be saved to the configuration file on the unit's Flash memory.**
- **Press No key and the changes you made will be discarded and the previous configuration will remain.**

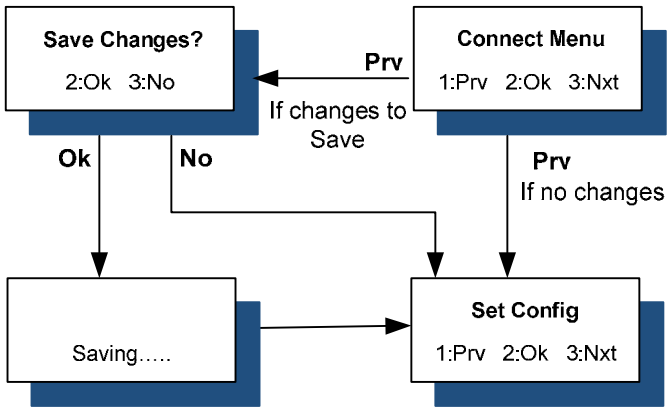

Figure 12: Saving Phone Menu Changes

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5 CONFIGURING THE SWITCH MODULE AND REMOTE MODULE

The Switch Module and Remote Module must be installed properly and the analog lines on both devices must be operational before continuing.

Initial configuration

Do NOT connect the Switch Module to the PBX or connect the digital telephone to the Remote Module until the Setup Wizard has been run. An improperly configured Switch Module can cause damage to the PBX line card and an improperly configured Remote Module can cause damage to the digital telephone set.

The Setup Wizard

The Switch Module and Remote Module are programmed at the factory with "default" settings including no PBX protocol and providing basic parameters to accommodate many network environments. It will be necessary to select the desired PBX type and change these settings for the specific network, user or corporate requirements.

The Setup Wizard is presented first with all new installations. The wizard will prompt the Administrator to enter required information necessary for basic configuration of the Switch Module and Remote Module. Simply follow the prompts to perform a basic configuration. Refer to this manual for a full description of the features presented when running the Setup Wizard.

If it becomes necessary to run the Setup Wizard at any time after the initial installation it can be accessed here:

Path: Gateway (and Remote) ->Utilities->Setup Wizard

Changing Passwords

Administrator Password

The administrator password provides access to the MC (Management Console) and MB (Management Browser). It is recommended to set an administrator password for the Switch Module and Remote Module because the units are shipped with no default password. Always keep passwords in a secure location.

Although setting the administrator password is described later in this document as part of the configuration steps it can be changed at any time after the initial installation here:

Path: Gateway (and Remote) ->Utilities->System->Set Password

If the unit's password is lost or forgotten please contact a customer support representative at 1-877-248-3587 or support@citel.com for details on how to reset the password. Port passwords are not affected.

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Rebooting the Switch Module or Remote Module

From the Management Console

To reboot the system from the Management Console:

Path: Gateway (and Remote)->Utilities->System->Reboot.

A warning message is displayed and you are asked to confirm the reboot:

```
#################################################################
#                                                               #
# WARNING: All connections will be lost. Reboot now? [y/n]      #
#                                                               #
#################################################################
```

Entering "[Y]es" will cause the unit to be rebooted and entering "[N]o" will abort the operation.

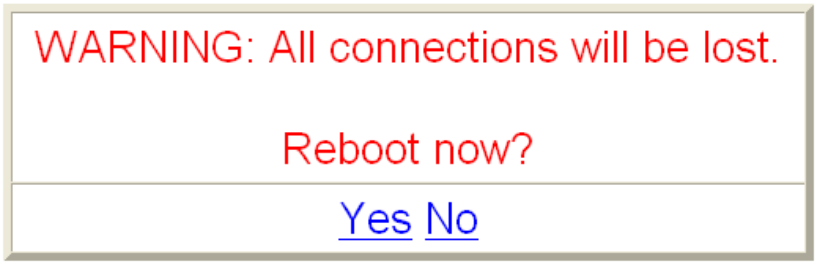
Note: This is a software reboot and will not reset all functionality as would a power cycle (hard reboot).

From the Management Browser

To reboot the system from the Management Browser:

Path: Gateway (and Remote)->Utilities->System->Reboot

A warning message is displayed and you are asked to confirm the reboot.



Clicking on "[Y]es" will cause the unit to be rebooted and clicking on "[N]o" will abort the operation.

Note: This is a software reboot and will not reset all functionality as would a power cycle (hard reboot).

From the Telephone Management Interface (Remote only)

To reboot the Remote Module from the Telephone Management Interface:

Access the Telephone Management Interface by pressing Hold key four times. Then press the **Nxt** key until you see the "Restart Unit" menu. Press **Ok** key.

You will then be prompted again with another menu. "OK to Restart?" If you again press **Ok** the Remote Module will display "Restarting…" and then reboot. Pressing **No** will abort the Restart process.

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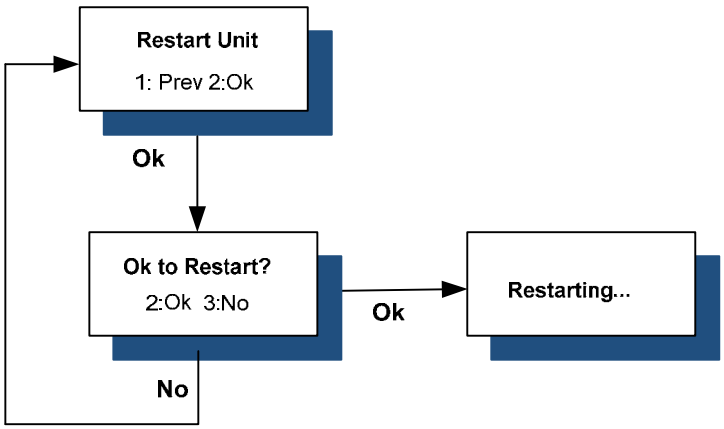

Figure 13 TMI Restart Menus

Note: This is a software reboot and will not reset all functionality as would a power cycle (hard reboot).

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Essential Configuration - Quick Reference

This section is a quick reference list of the essential configuration steps that must be performed during the execution of the Setup Wizard and/or after the Setup Wizard has been run to ensure proper functionality of the units. A full description of the features described below begins with the *Essential Configuration – Switch Module* section later in this document.

1. Set the Region Code. This is the Country the unit will be operating in. See the Switch Module – Essential Setup Wizard Configuration and Remote Module – Essential Setup Wizard configuration sections for full details.

   Only configurable using Setup Wizard.

   Path: Gateway (and Remote)->Utilities->Setup_Wizard

   ► Refer to page *xx and yy* for full details.

2. Set the PBX Type. This is the phone protocol the unit will be using. See the Switch Module – Essential Setup Wizard Configuration and Remote Module – Essential Setup Wizard configuration sections for full details.

   Only configurable using Setup Wizard.

   Path: Gateway (and Remote)->Utilities->Setup_Wizard

   ► Refer to page *xx and yy* for full details.

3. Set the Telco type, dialup or leased line operation. Configure the Modem Settings for communication between the Switch and Remote Module. See the Switch Module *Essential Connect Parameters - Modem Settings* and the Remote Module Essential Connect Parameters sections for full details.

   Path: Gateway(and Remote)->Configuration->Connect->Modem_Settings

   TMI Path: (Remote Only)->Set Config->Modem Menu->Leased Line

   ► Refer to page *39* and yy for full details.

4. Set the Dial Numbers for the Remote Module (If Leased Line is disabled). These are the phone numbers of the analog telephone lines connected to the Switch and Remote Modules. See the Remote Module *Essential Connect Parameters – Dial Numbers* for full details.

   Path: Remote->Configuration->Connect->Dial_Numbers

   TMI Path: (Remote Only)->Set Config->Connect Menu->Office Number

   ► Refer to page *42* for full details.

5. Set the User ID on Remote Side. It is recommended but not required to set the Remote User ID, if not configured you will be prompted to enter User ID on each connect to Switch Module. The default User ID is 1 on Switch side. See the Remote Module *Advanced Port Setup* for full details.

   Path: Remote->Configuration->Port->User_ID

   TMI Path: (Remote Only)->Set Config->Connect Menu->User ID

   ► Refer to page *xx* for full details.

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Advanced Configuration – Quick Reference

This section is a quick reference list of the additional configuration steps that can be performed either during the execution of the Setup Wizard or anytime after to improve system performance. Although not required, the advanced features may be used to assist with managing the units or trouble shooting operational issues. Please consult this section prior to contacting customer support. A full description of the features described below begins with the *Advanced Configuration – Switch Module* section.

1. Identify the port by entering a description for the specific port (typically user's name). See the Switch Module *Advanced Port Setup* and the Remote Module *Advanced Port Setup* sections for full details.

   Path: Gateway (and Remote) ->Configuration->Port

   ► Refer to page *44* and page *54* for full details.

2. Set the User IDs to "map" remote users with specific PBX ports. Primarily used when connecting the Remote Module to a multi-user device such as a PBXgateway. See the Switch Module *Advanced Port Setup* and the Remote Module *Advanced Port Setup* sections for full details.

   Path: Gateway (and Remote) ->Configuration->Port

   TMI Path: (Remote Only)->Set Config->Connect Menu->User ID

   ► Refer to page *44* and page *54* for full details.

3. Setup a Connect Password to provide a secure connection restricting unauthorized access to the Switch Module port from the Remote Module. See the Switch Module *Advanced Port Setup* and the Remote Module *Advanced Port Setup* sections for full details

   Path: Gateway (and Remote) ->Configuration->Port

   TMI Path: (Remote Only)->Set Config->Connect Menu->Password

   ► Refer to page *44* and page *54* for full details.

4. Setup a message (Banner) to be displayed on the phone set when not connected to the Switch Module. Typically this would be the company name (i.e. ABC Company). See the Remote Module *Advanced Port Setup* section for full details.

   Path: Remote->Configuration->Port

   ► Refer to page *54* for full details.

5. Configure Line Signaling (Nortel Norstar PBX only) – Used to help eliminate clicking noise in the audio path on certain installation environments. See the Switch Module *Advanced Port Setup* and the Remote Module *Advanced Port Setup* sections for full details

   Path: Gateway (and Remote) ->Configuration->Port

   ► Refer to page *44* and page *54* or full details.

6. Enable Active Call Monitoring (Nortel Norstar PBX only) to monitor another station's activity (on another call, for example). See the Remote Module *Advanced Port Setup* section for full details.

   Path: Remote->Configuration->Port->Phone_Features

   ► Refer to page *54* or full details.

7. Setting Voice parameters. Sometimes the administrator may need to modify the default voice settings to improve voice quality. See the Switch Module *Advanced Port Setup* for full details.

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Path: Gateway ->Configuration->Port

► Refer to page *44* for full details.

8. Modify Modem Settings. Certain site conditions may require changing the default Modem Settings. Administrator can change the Connect Rate, Leased Line, Pulse dialing or Init String for specific site needs. See the Switch Module *Advanced Connect Parameters – Modem Settings* and Remote Module *Advanced Connect Parameters – Modem Settings* for full details.

   Path: Gateway (and Remote)->Configuration->Connect->Modem_Settings

   TMI Path: (Remote Only)->Set Config->Modem Menu

   ► Refer to page *55* or full details.

9. Set Dialback. If enabled, the Remote module will initiate connection to Switch Module, then the network connection is torn down and the Switch module will connect to the Remote module. This feature is used to have network connection calls originated (and are subsequently billed) from the PBX location and not from the Remote Module location. See the Remote section for full details.

   Path: Remote->Configuration->Connect->Dialback

   TMI Path: (Remote Only)->Set Config->Connect Menu->Dialback

   ► Refer to page *55* or full details.

   Path: Remote->Configuration->Connect->Dial_Numbers->Remote_Number

   TMI Path: (Remote Only)->Set Config->Connect Menu->Remote Number

   ► Refer to page *55* or full details.

10. Set the IP parameters to allow remote administration of the Switch Module and Remote Module over the IP network. See the Switch Module *Advanced IP Parameters – LAN Address* and Remote Module sections for full details.

    Path: Gateway (and Remote) ->Configuration->IP->LAN->Address

    ► Refer to page *47* and page *57* for full details.

11. Enable Telnet and FTP for remote configuration and upgrading of the software. See the Switch Module Advanced IP Parameters – Telnet and FTP and Remote Module Advanced IP Parameters – Telnet and FTP sections for full details.

    Path: Gateway (and Remote) ->Configuration->IP->LAN

    ► Refer to page *47* and page *57* for full details.

FTP should always be disabled when not performing a software upgrade or file transfer to and from the units.

12. The DNS parameter allows the System Administrator to find the Switch Module by an assigned name instead of IP address. See the Switch Module *Advanced IP Parameters – DNS* and Remote Module *Advanced IP Parameters – DNS* sections for full details.

    Path: Gateway (and Remote) ->Configuration->IP->DNS

    ► Refer to page *50* and page ***Error! Bookmark not defined.*** full details.

13. Provide a system name making it easier to identify the unit when administering multiple units. See the Switch Module *Advanced System Parameters – System* and Remote Module *Advanced System Parameters – System Settings* sections for full details.

    Path: Gateway (and Remote) ->Configuration->System

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► Refer to page *51* and page *60* for full details.

14. Change the Serial Port default baud rate (9600) to a higher or lower speed depending on administration requirements. See the Switch Module *Advanced System Parameters – System* and Remote Module *Advanced System Parameters – System Settings* sections for full details.

    Path: Gateway (and Remote) ->Configuration->System

    ► Refer to page *51* and page *60* for full details.

15. Setup the Remote Module to use the time stamp from the Switch Module for trouble shooting purposes. See the Remote Module *Advanced System Parameters – System Settings* section for full details.

    Path: Remote->Configuration->System

    ► Refer to page *60* for full details.

16. Enable an Administrator password to ensure that only authorized personnel can configure the Switch and Remote Module. See the Switch Module ss and Remote Module ss sections for full details.

    Path: Gateway (and Remote) ->Utilities->System->Set Password

    ► Refer to page *52* and page *60* for full details.

An administrator's password should be set to restrict unauthorized access to the Switch Module. If the administrator password is lost or forgotten please contact a customer representative at 1-877-248-3587 or support@citel.com on how to reset the password.

17. Set the Time and Date to provide accurate time and date stamps for trouble shooting and system maintenance. See the Switch Module

    Path: Gateway (and Remote) ->Utilities->System->Set

    ► Refer to page *52* and page *60* for full details.

The 1100A units do not have a real time clock and the Time and Date (for the Remote and Gateway Modules) will not remain accurate over long periods of time. The Digital phone time and date is controlled by the PBX and not affected by the Time and Date stored on the Remote and Gateway Module.

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Essential Configuration – Switch Module

Once the Switch Module and Remote Module are successfully connected the MC (Management Console) allows for the configuration of the units according to the requirements of the individual users. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Switch Module.

Do NOT connect the Switch Module to the PBX or connect the digital telephone to the Remote Module until the Setup Wizard has been run. An improperly configured Switch Module can cause damage to the PBX line card and an improperly configured Remote Module can cause damage to the digital telephone set.

Essential Setup Wizard Configuration

There are two items that **must** be configured using the Setup Wizard:

- The Region Code
- The PBX Type

Path: Gateway->Utilities->Setup_Wizard

1. Set the Region Code. Below is an example of a Setup Wizard configuration for changing the Region code from Canada to the United States.

```
************************************************************
***********  We need to specify the Region Code  ***********
************************************************************
Currently configured Region is 'Canada'
Do you want to select a new Region? [y/n] y

Enter your country code (? to list):?

<Country Code>:<Country>
 43:Austria          32:Belgium           1:Canada           45:Denmark
358:Finland          33:France           49:Germany          30:Greece
 39:Italy            31:Netherlands     351:Portugal         34:Spain
 46:Sweden           41:Switzerland      44:United Kingdom    1:United States

Enter your country code (? to list):1
Country Canada? [y/n] n
Country United States? [y/n] y

New Region is 70, 'United States'
```

2. Set the PBX Type. Below is an example of a Setup Wizard configuration for the setting the PBX Type to Meridian Protocol.

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```
************************************************************
************  We need to specify the PBX type  *************
************************************************************
Please select your PBX type:
    Definity      ? [y/n] n
    Magix         ? [y/n] n
    Norstar       ? [y/n] n
    Meridian      ? [y/n] y
New PBX type is 'Meridian'
```

Essential Connect Parameters - Modem Settings

3. Configuring the **Modem Settings** – Set the Modem settings for connection to the Switch Module from the Remote Module:

Path: Gateway->Utilities->Setup_Wizard

Path: Gateway->Configuration->Connect

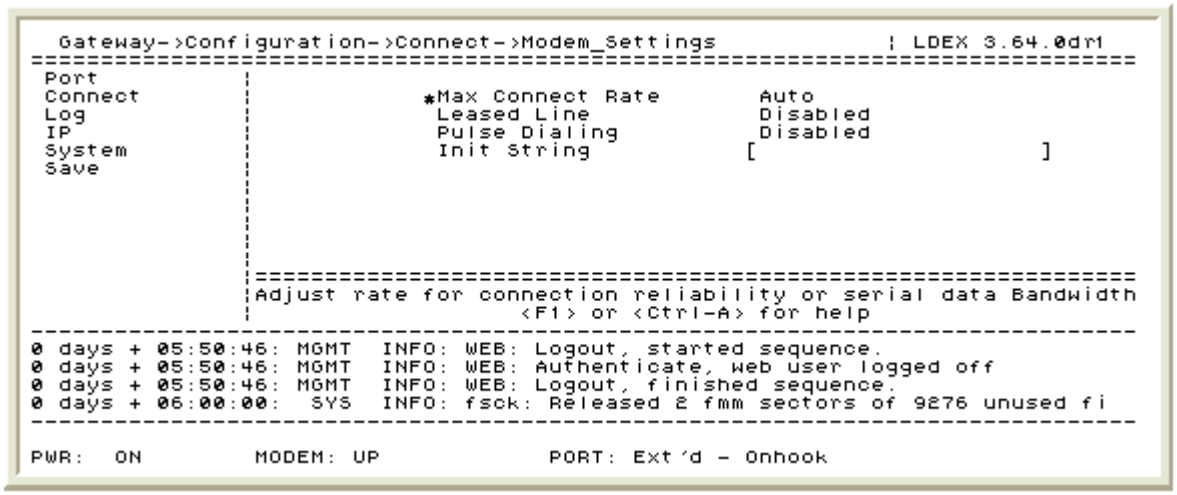

Figure 14: Switch Module – Modem Settings Configuration Screen

There is only one essential Modem Setting configuration for the Switch side and that is the Telco type which is the Leased Line setting, using the default setting for remaining Modem Settings should be satisfactory.

a) *Leased Line* – An analog leased line is a line type offered by the telephone service provide (CO) and would be a dedicated line between the Switch and Remote Module (not a "dialup" connection). Only 'wet' leased lines are supported. A standard analog line (Leased Line disabled) is the default setting.

THE ESSENTIAL CONFIGURATION PARAMETERS FOR THE SWITCH MODULE ARE NOW COMPLETE. PLEASE CONTINUE CONFIGURATION WITH THE REMOTE MODULE.

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Essential Configuration – Remote Module

Once the Switch Module and Remote Module are connected, the MC (Management Console) allows for the configuration of the individual ports according to the requirements of the individual users. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Remote Module.

Do NOT connect the Switch Module to the PBX or connect the digital telephone to the Remote Module until the Setup Wizard has been run. An improperly configured Switch Module can cause damage to the PBX line card and an improperly configured Remote Module can cause damage to the digital telephone set.

Essential Setup Wizard Configuration

There are two items that **must** be configured using the Setup Wizard:

- The Region Code
- The PBX Type

Path: Remote->Utilities->Setup_Wizard

1. Set the Region Code. Below is an example of a Setup Wizard configuration for changing the Region code from the United States to Canada

```
************************************************************
***********  We need to specify the Region Code  ***********
************************************************************
Currently configured Region is 'United States'
Do you want to select a new Region? [y/n] y

Enter your country code (? to list):?

<Country Code>:<Country>
 43:Austria          32:Belgium           1:Canada           45:Denmark
358:Finland          33:France           49:Germany          30:Greece
 39:Italy            31:Netherlands     351:Portugal         34:Spain
 46:Sweden           41:Switzerland      44:United Kingdom    1:United States

Enter your country code (? to list):1
Country Canada? [y/n] y

New Region is 70, 'Canada'
```

2. Set PBX Type. Below is an example of a Setup Wizard configuration for the setting the PBX Type to Magix Protocol.

```
************************************************************
************  We need to specify the PBX type  *************
************************************************************
```

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```
Please select your PBX type:
    Definity      ? [y/n] n
    Magix         ? [y/n] y
New PBX type is 'Magix'
```

Essential Connect Parameters - Modem Settings

3. Configuring the **Modem Settings** – Set the Modem settings for connection to the Switch Module from the Remote Module:

Path: Gateway->Utilities->Setup_Wizard

Path: Gateway->Configuration->Connec

TMI Path: (Remote Only)->Set Config->Modem Menu->Leased Line

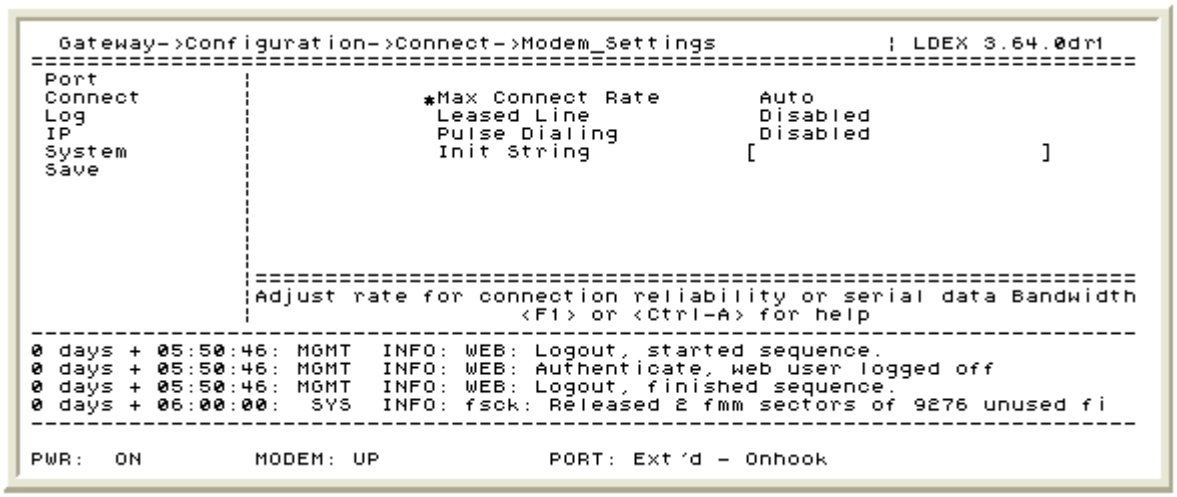

Figure 15: Switch Module – Modem Settings Configuration Screen

There is only one essential Modem Setting configuration for the Switch side and that is the Telco type which is the Leased Line setting, using the default setting for remaining Modem Settings should be satisfactory.

a) *Leased Line* – An analog leased line is a line type offered by the telephone service provide (CO) and would be a dedicated line between the Switch and Remote Module (not a "dialup" connection). Only 'wet' leased lines are supported. A standard analog line (Leased Line disabled) is the default setting.

Essential Connect Parameters

The Connect Parameters on the Remote Module are for configuring the dial numbers and internal modem settings.

Path: Remote->Configuration->Connect

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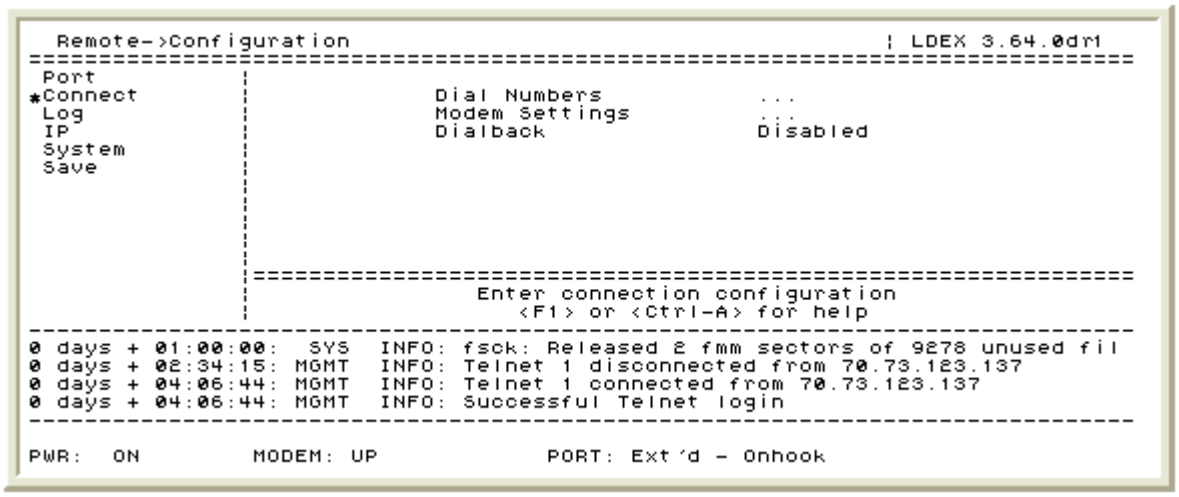
Remote->Configuration
LDEX 3.64.0dr1
Port
*Connect
Log
IP
System
Save
Dial Numbers ...
Modem Settings ...
Dialback Disabled
Enter connection configuration
<F1> or <Ctrl-A> for help
0 days + 01:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9278 unused fil
0 days + 02:34:15: MGMT INFO: Telnet 1 disconnected from 70.73.123.137
0 days + 04:06:44: MGMT INFO: Telnet 1 connected from 70.73.123.137
0 days + 04:06:44: MGMT INFO: Successful Telnet login
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 16: Remote Module – Connect Configuration Screen

Essential Connect Parameters – Dial Numbers

The Dial Numbers are used to connect to the Switch Module from the Remote Module over the PSTN via the internal modem.

Path: Remote->Configuration->Connect->Dial_Numbers

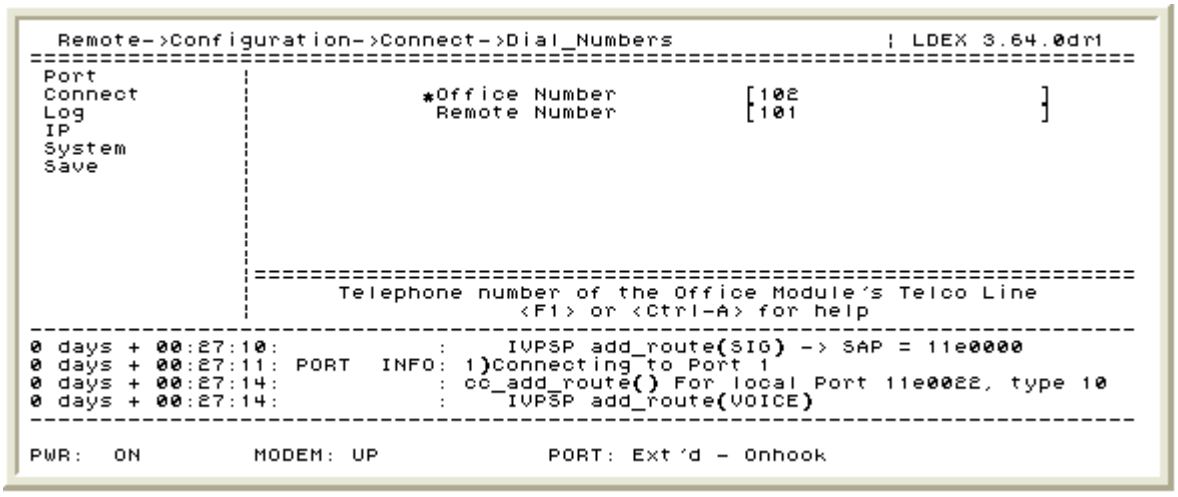
Remote->Configuration->Connect->Dial_Numbers
LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
*Office Number [102]
Remote Number [101]
Telephone number of the Office Module's Telco Line
<F1> or <Ctrl-A> for help
0 days + 00:27:10: : IVPSP add_route(SIG) -> SAP = 11e0000
0 days + 00:27:11: PORT INFO: 1)Connecting to Port 1
0 days + 00:27:14: : cc_add_route() For local Port 11e0022, type 10
0 days + 00:27:14: : IVPSP add_route(VOICE)
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 17: Remote Module – Dial Numbers Configuration Screen

4. Setting the **Dial Numbers** – Dial Numbers are used to connect the Switch Module from the Remote Module:

   a) *Office Number* – This is the phone number of the telephone line connected to the Switch Module.

   b) *Remote Number* – This is the phone number of the telephone line connected to the Remote Module. This number will be transmitted to the Switch Module for use with the Dialback feature (and is also used to identify the Remote Module connected to the Switch module). Refer to the Advanced Configuration for more details.

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Recommended Connect Parameters – User ID

There is one more Recommend connect parameter to configure. The User ID is required for all 1100A connections. The default Remote User ID is not configured so on each connection the user would be prompted to enter the desired User ID. If the User ID is configured then the remote User will not be prompted each connection. The User ID can be configured using the Setup Wizard or the MC.

Path: Remote->Utilities->Setup_Wizard

Path: Remote->Configuration->Port

You can also configure Modem setting using the TMI

TMI Path: (Remote Only)->Set Config->Connect Menu-> User ID

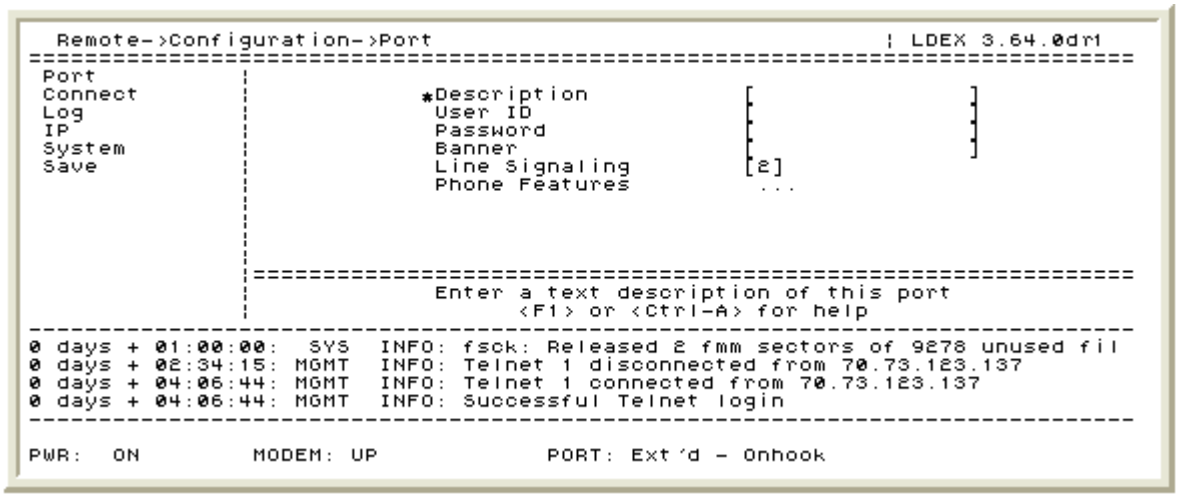

Figure 18: Remote Module – Port Configuration Screen

5. Setting the **User ID.** A User ID "maps" a specific port on the Remote Module to a specific port on the Switch Module. When connecting to the 1100A Switch you require a User ID. The default ID is 1 (representing the port number). This feature is also typically used when connecting to one of Citel's multi-user devices such as a PBXgateway. If this remote is connecting to a multi-user device refer to the *System Administrator's Guide* of the PBXgateway for more information.

THE ESSENTIAL CONFIGURATION PARAMETERS FOR THE REMOTE MODULE ARE NOW COMPLETE. PLEASE TEST THE CURRENT CONFIGURATION BY MAKING A FEW "TEST" PHONE CALLS PRIOR TO GOING ON TO THE ADVANCED CONFIGURATION SECTION.

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Advanced Configuration – Switch Module

Although usually not required, the advanced features may be used to assist with managing the Switch Module or trouble shooting voice or performance issues. The following is a detailed description of the programming areas that would be considered "advanced" to the proper operation of the Switch Module. Please consult the Advanced Configuration section prior to contacting customer support should issues arise.

Advanced Port Setup

The Switch Module Port configuration screen is shown below:

Path: Gateway->Configuration->Port

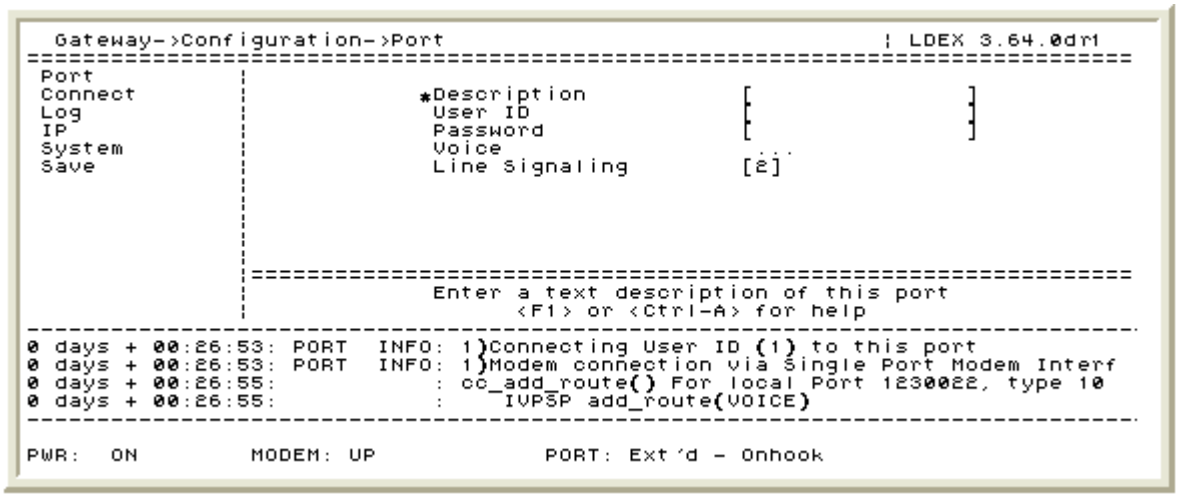

Figure 19: Switch Module – Port Configuration Screen

1. Port **Description** – The port description accepts 16 characters of text to identify the user of a specific port. Typically the user's name would be entered (i.e. John Smith).
2. Setting a **User ID** – A User ID "maps" a specific port on the Remote Module to a specific port on the Switch Module. When connecting to the 1100A Switch you require a User ID. The default ID is 1 (representing the port number) on the Switch Module side. This feature is typically used when connecting to one of Citel's multi-user devices such as a PBXgateway. If this remote is connecting to a multi-user device refer to the *System Administrator's Guide* of the PBXgateway for more information.
3. Setting a Connect **Password** – A connect Password restricts access to the telephone port and is typically used in conjunction with the User ID feature. If the password is set only on the Switch Module then the user will have to manually input the password when connecting. If, however, a password is entered for a port on the Switch Module *and* Remote Module the user will not be required to take any action.
4. Configuring the **Line Signaling** (Nortel Norstar PBX only) – On some installation environments a clicking noise may be present in the audio path. This is caused by errors in the duty cycle of the signaling wave form. This setting can be adjusted from 0 to 7. Some experimentation may be required to eliminate any audio issues that may arise.

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Advanced Port Setup – Voice Parameters

The Switch Module Port configuration screen is shown below:

Path: Gateway->Configuration->Port

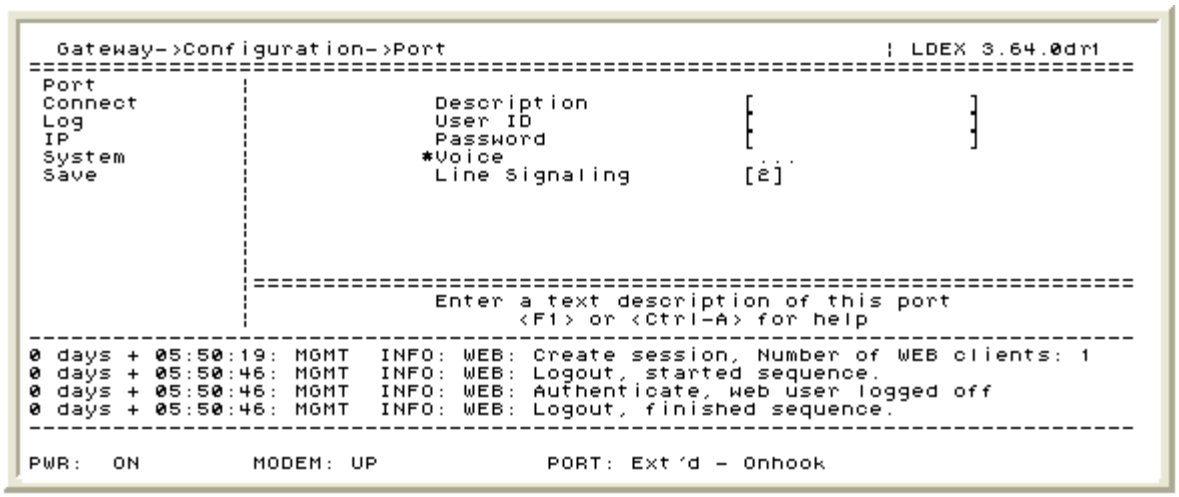

Figure 20: Switch Module - Port Configuration Screen

5. Setting the **Voice** Parameters – Voice parameters are used to "fine tune" voice processing. Users will have to disconnect from the Switch Module and reconnect for any changes to these parameters to take affect.

It should be noted that the default settings for the voice parameters are usually sufficient and should not require adjustment. It is, therefore, recommended that a few "test" calls be made to identify any voice quality issues prior to configuring the voice parameters. The Voice Parameters screen is shown on the next page:

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Path: Gateway->Configuration->Port->Voice

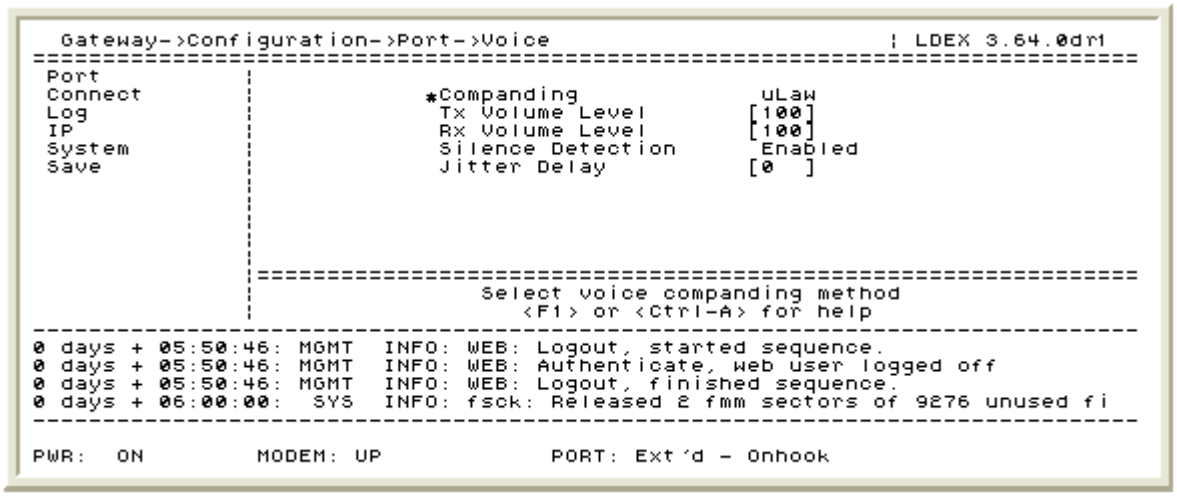
Gateway->Configuration->Port->Voice
LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
*Companding uLaw
Tx Volume Level [100]
Rx Volume Level [100]
Silence Detection Enabled
Jitter Delay [0]
Select voice companding method
<F1> or <Ctrl-A> for help
0 days + 05:50:46: MGMT INFO: WEB: Logout, started sequence.
0 days + 05:50:46: MGMT INFO: WEB: Authenticate, web user logged off
0 days + 05:50:46: MGMT INFO: WEB: Logout, finished sequence.
0 days + 06:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9276 unused fi
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 21: Switch Module – Voice Configuration Screen

a) *Companding* – This is a telecommunications standard, by region, for the transmission of voice. In North America the standard is µLaw (pronounced mu law) and in Europe the standard is aLaw. When the companding is not set correctly voice will sound choppy and garbled.

b) *Tx Volume Level* – The outgoing volume level of the signal can be adjusted to decrease the amount of echo that may be experienced during calls in some areas. The transmit level can be adjusted from 25% to 150%.

c) *Rx Volume Level* - The incoming volume level of the signal can be adjusted to decrease the amount of echo that may be experienced during calls in some areas. The transmit level can be adjusted from 25% to 150%.

d) *Silence Detection* – When voice is transmitted over the network it is treated as data. If silence detection is enabled then no "data" is sent across the network during silent periods of a conversation.

e) *Jitter Delay* – This is the amount of delay (in milliseconds) in sending voice packets to account for the "Jitter" in a particular network. If not set properly voice may sound choppy. Increasing the Jitter Delay parameter reduces audible audio noise and helps prevent this from occurring. If required, it is recommended to begin at 10 ms when adjusting for network jitter.

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Advanced Connect Parameters - Modem Settings

1. Configuring the **Modem Settings** – Set the Modem settings for connection to the Switch Module from the Remote Module:

Path: Gateway->Configuration->Connect

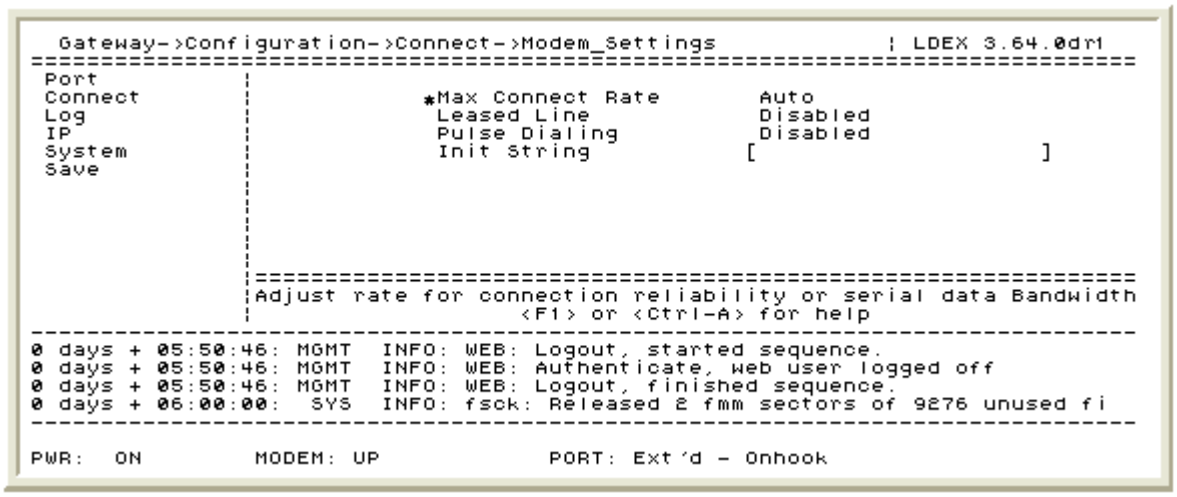

Figure 22: Switch Module – Modem Settings Configuration Screen

Modem Settings configuration may require changing from default values based on Line type, Line conditions and specific connection requirements.

a) *Max Connect Rate* – The Switch and Remote Module communicate by transmitting signals between the switch location and the remote location over an analog phone line. When set to Auto the first attempt at connecting will be at 21600 bps which provides the most stable voice environment. If required, the connect rate can be set to 33.6Kbps, 31.2Kbps, 28.8Kbps, 26.4Kbps, 24Kbps, 21.6Kbps, 19.2Kbps and 16.8Kbps. If having connection problems try a lower rate than 21600 bps.

b) *Leased Line* – An analog leased line is a line type offered by the telephone service provide (CO) and would be a dedicated line between the Switch and Remote Module (not a "dialup" connection). A standard analog line is the default setting.

c) *Pulse Dialing* – An older type of analog line that was used with the rotary dialing phone type. The default is Tone dialing.

d) *Init String* – The Switch and Remote Module initialization string is based on the standard modem AT Command set. Any AT commands can be added to comply with any corporate standards or requirements.

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Advanced IP Parameters – LAN Address

Prior to the administrator having remote access to the Switch Module and Remote Module the system IP parameters must be configured. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Switch Module and Remote Module. The Switch Module LAN Address configuration screen is shown below:

Path: Gateway->Configuration->IP->LAN->Address

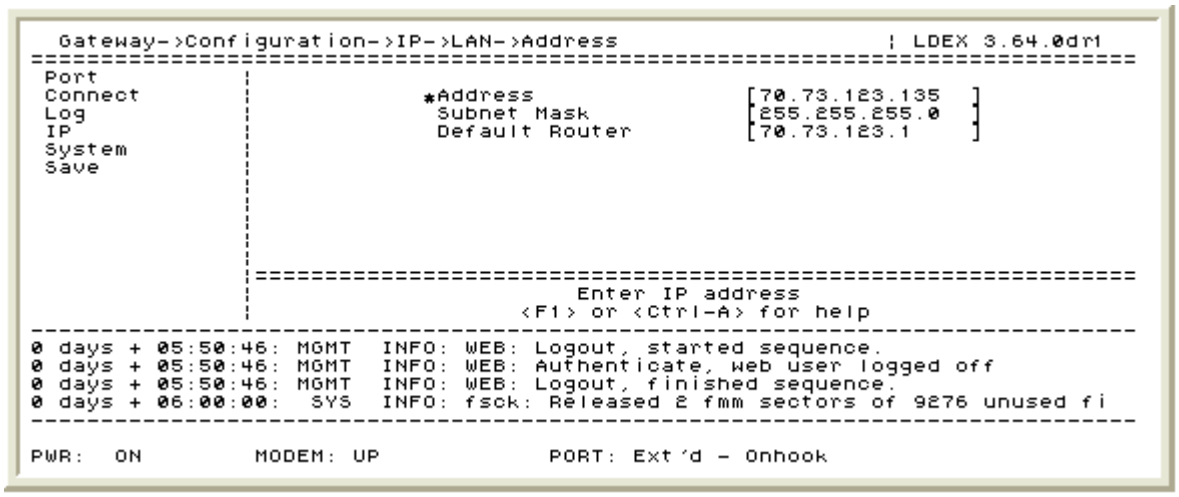
Gateway->Configuration->IP->LAN->Address
LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
*Address [70.73.183.135]
Subnet Mask [255.255.255.0]
Default Router [70.73.183.1]
Enter IP address
<F1> or <Ctrl-A> for help
0 days + 05:50:46: MGMT INFO: WEB: Logout, started sequence.
0 days + 05:50:46: MGMT INFO: WEB: Authenticate, web user logged off
0 days + 05:50:46: MGMT INFO: WEB: Logout, finished sequence.
0 days + 06:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9276 unused fi
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 23: Switch Module – LAN Address Configuration Screen

1. Configuring the unit's IP **Address** – A valid IP address for the Switch Module must be entered in order for it to operate on the IP network. The IP address should be obtained from the corporate IT Administrator prior to configuring the Switch Module.
2. Configuring the **Subnet Mask** - A valid subnet mask for the Switch Module must also be entered in order for it to operate on the IP network. The subnet mask should be obtained from the corporate IT Administrator prior to configuring the Switch Module.
3. The **Default Router** – A valid default router address must be entered to reach IP hosts not on this same IP sub-network. The default router should be obtained from the corporate IT Administrator prior to configuring the Switch Module.

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Advanced IP Parameters – Telnet and FTP

Prior to the administrator having remote access to the Switch Module and Remote Module the system IP parameters must be configured. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Switch Module and Remote Module. The Switch Module Telnet and FTP configuration screen is shown below:

Path: Gateway->Configuration->IP->LAN

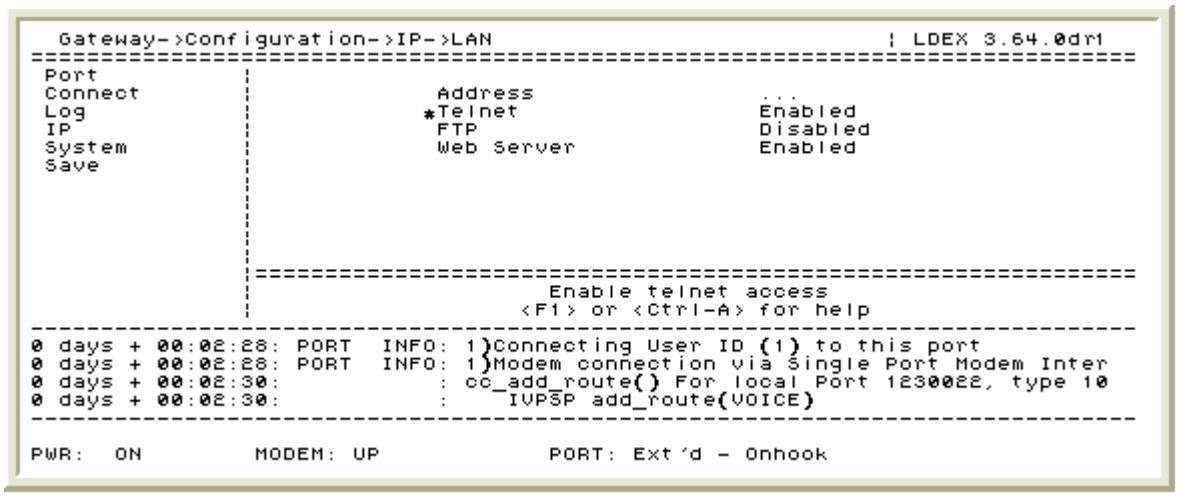

Figure 24: Switch Module – Telnet, Rlogin and FTP Configuration Screen

1. **Telnet** – The Switch Module can be accessed remotely by use of a standard Telnet session. By default Telnet is enabled.
2. **FTP** – File Transfer Protocol (FTP) is used primarily during the upgrade process. For security reasons this feature is disabled on default. FTP should remain disabled when not upgrading a unit or unless otherwise instructed to by a Customer Support representative.

FTP should always be disabled when not performing a software upgrade or file transfer to and from the units.

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Advanced IP Parameters – DNS

This parameter allows the System Administrator to find the Switch Module by an assigned name. A Domain Name Server (DNS) is used in IP networks for translating a host domain name into an IP address. This information is stored in a DNS server. The information required for these fields should be obtained from the corporate IT manager. Enabling DNS on the Switch Module allows the System Administrator to search for it by its name and/or IP address. The DNS parameter is NOT enabled by default. The Switch Module DNS (Domain Name Server) configuration screen is shown below:

Path: Gateway->Configuration->IP->DNS

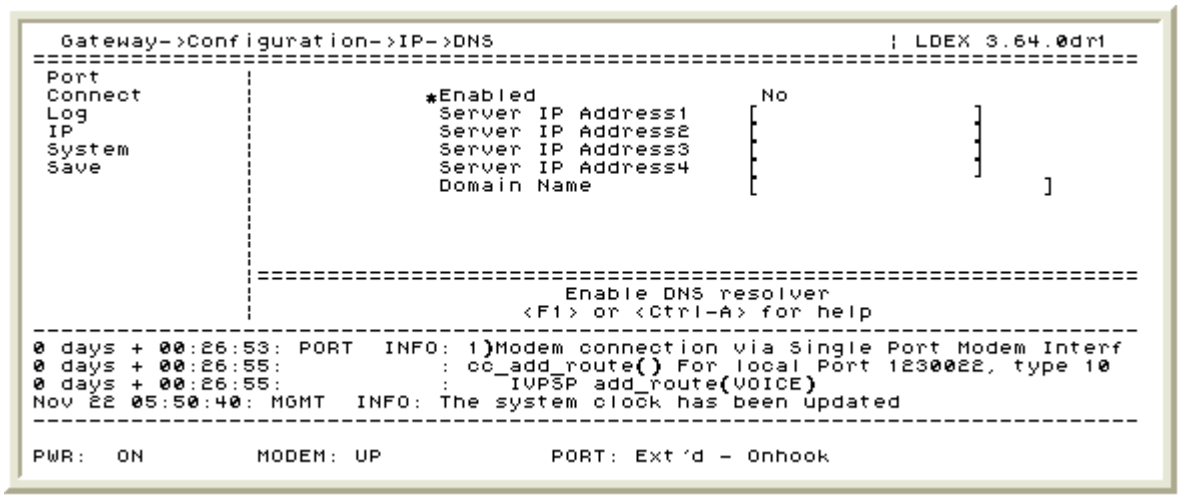
Gateway->Configuration->IP->DNS
! LDEX 3.64.0dm1
Port
Connect
Log
IP
System
Save
*Enabled No
Server IP Address1
Server IP Address2
Server IP Address3
Server IP Address4
Domain Name
Enable DNS resolver
<F1> or <Ctrl-A> for help
0 days + 00:26:53: PORT INFO: 1)Modem connection via Single Port Modem Interf
0 days + 00:26:55: : cc_add_route() For local Port 1830022, type 10
0 days + 00:26:55: : IVPSP add_route(VOICE)
Nov 22 05:50:40: MGMT INFO: The system clock has been updated
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 25: Switch Module – Static Routes Configuration Screen

1. Setting DNS to **Enabled** – 'Yes' will enable DNS and 'No' will disable DNS.
2. The **Server IP Address1** (to 4) – Enter the address(es) of the DNS servers up to 15 characters. The Server IP addresses should be obtained from the corporate IT Administrator prior to configuring the Switch Module.
3. Entering the **Domain Name** – The domain name (i.e. Citel) is entered in this field to a maximum of 20 characters. The Domain Name should be obtained from the corporate IT Administrator prior to configuring the Switch Module.

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Advanced System Parameters – System Settings

The Switch Module system configuration screen is shown below:

Path: Gateway->Configuration->System

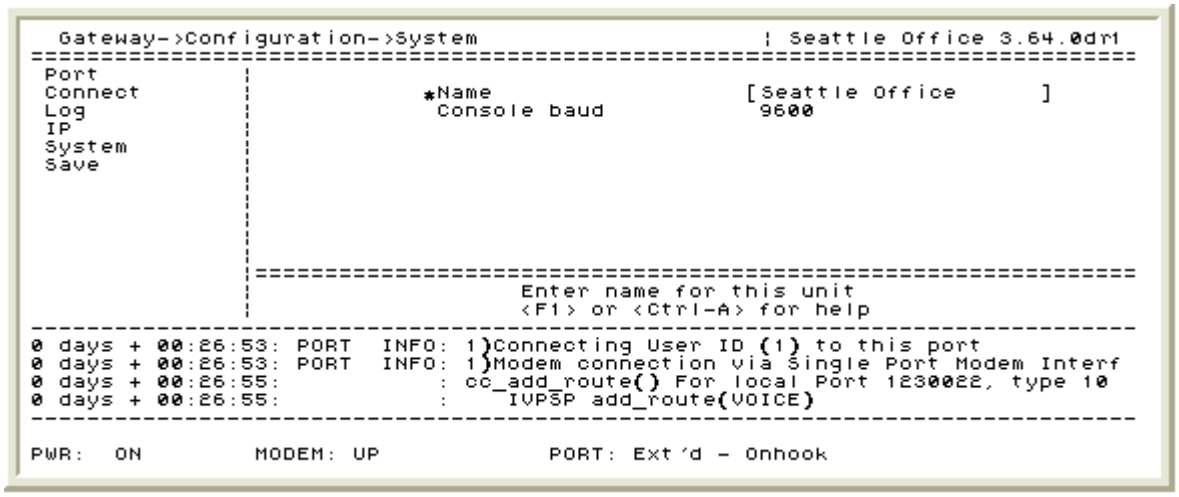
Gateway->Configuration->System ! Seattle Office 3.64.0dm1
Port
Connect
Log
IP
System
Save
*Name [Seattle Office]
Console baud 9600
Enter name for this unit
<F1> or <Ctrl-A> for help
0 days + 00:26:53: PORT INFO: 1)Connecting User ID (1) to this port
0 days + 00:26:53: PORT INFO: 1)Modem connection via Single Port Modem Interf
0 days + 00:26:55: : cc_add_route() For local Port 1230022, type 10
0 days + 00:26:55: : IVPSP add_route(VOICE)
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 26: Switch Module – System Name/Connect Speed Configuration Screen

1. Assigning a system **Name** – The Name field in the Switch Module is used for identification purposes only and appears next to the software revision (see above). This makes it easier for an administrator when managing multiple sites. Typically the geographic location of the unit is input "Seattle Office" for example. Any text up to 15 characters can be input in this field.
2. Changing the **Console baud** – This is the speed at which information is transmitted to and from the Switch Module through the console port labeled "COMM" on the back of the unit. The baud rate can be changed to 2400, 4800, 9600, 19200 or 38400. The default is 9600.

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Advanced System Parameters – Administrator's Password

An administrator's password should be set to restrict unauthorized access to the Switch Module. Individual port passwords are not affected.

Path: Gateway->Utilities->System->Set Password

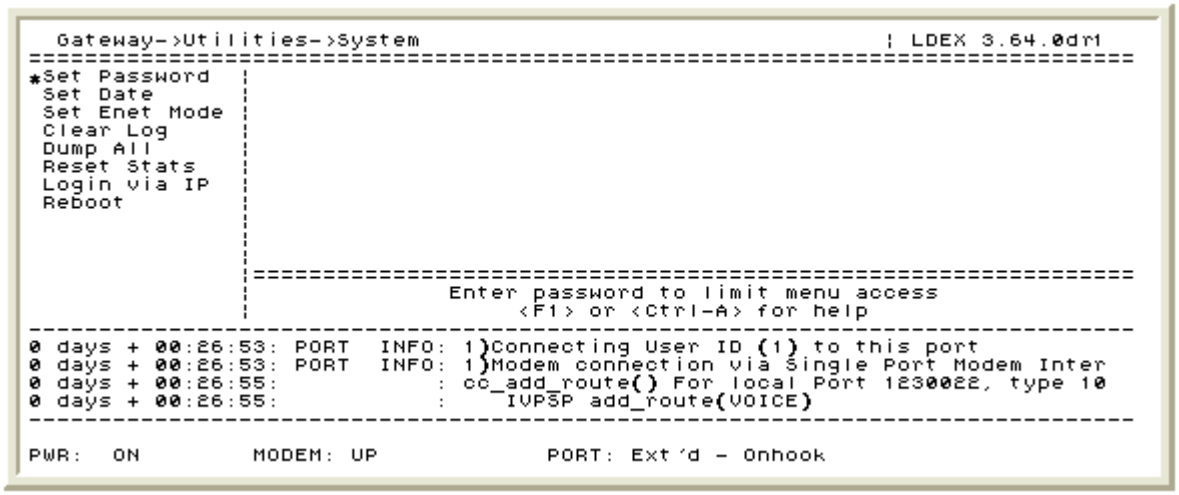
Gateway->Utilities->System
LDEX 3.64.0dr1
*Set Password
Set Date
Set Enet Mode
Clear Log
Dump All
Reset Stats
Login via IP
Reboot
Enter password to limit menu access
<F1> or <Ctrl-A> for help
0 days + 00:26:53: PORT INFO: 1)Connecting User ID (1) to this port
0 days + 00:26:53: PORT INFO: 1)Modem connection via Single Port Modem Inter
0 days + 00:26:55: : cc_add_route() For local Port 1830022, type 10
0 days + 00:26:55: : IVPSP add_route(VOICE)
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 27: Switch Module – Administrator's Password Configuration Screen

1. The **Set Password** function - The administrator password can be a maximum of 10 digits and it restricts unauthorized access to the Management Console (MC) and Management Browser (MB). It is important to set an administrator password because the unit's password is blank (no password) by default. Keep the password in a safe place.

An administrator's password should be set to restrict unauthorized access to the Switch Module. If the administrator password is lost or forgotten please contact a customer representative at 1-877-248-3587 or support@citel.com on how to reset the password.

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Advanced Utilities – Time and Date

The Switch Module time and date configuration screen is shown below:

Path: Gateway->Utilities->System->Set Date

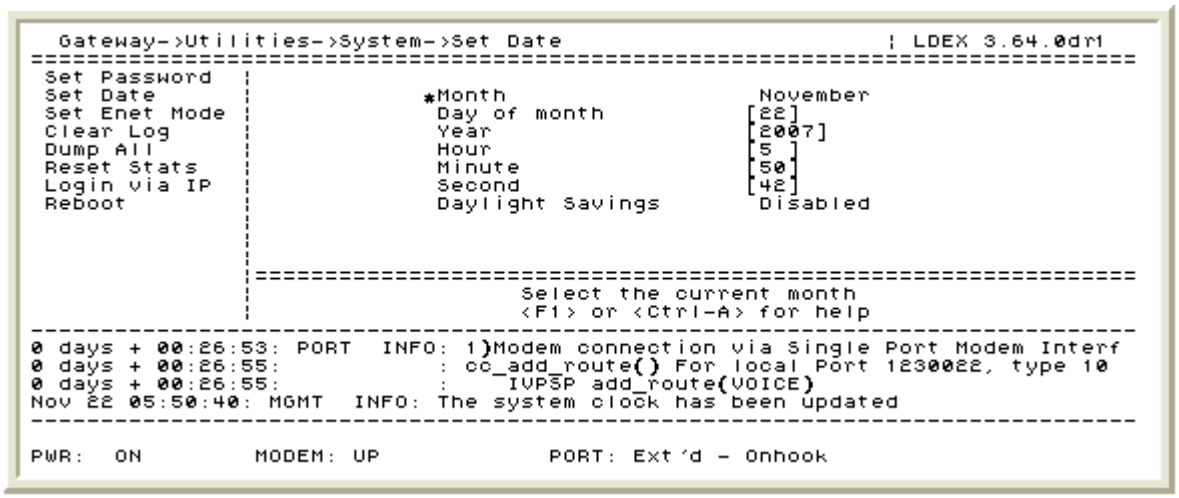
Gateway->Utilities->System->Set Date
! LDEX 3.64.0dm1
Set Password
Set Date
Set Enet Mode
Clear Log
Dump All
Reset Stats
Login via IP
Reboot
*Month November
Day of month [22]
Year [2007]
Hour [5]
Minute [50]
Second [48]
Daylight Savings Disabled
Select the current month
<F1> or <Ctrl-A> for help
0 days + 00:26:53: PORT INFO: 1)Modem connection via Single Port Modem Interf
0 days + 00:26:55: : cc_add_route() For local Port 1830022, type 10
0 days + 00:26:55: : IVPSP add_route(VOICE)
Nov 22 05:50:40: MGMT INFO: The system clock has been updated
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 28: Switch Module – Time and Date Configuration Screen

1. **Set Date** - Adjust the fields to show the correct time and date.

The Daylight Savings field has been updated to reflect the new DST (Daylight Savings Time) changes in North America for 2007 as per the Energy Policy Act of 2005.

The 1100A units do not have a real time clock and the Time and Date (for the Remote and Gateway Modules) will not remain accurate over long periods of time. The Digital phone time and date is controlled by the PBX and not affected by the Time and Date stored on the Remote and Gateway Module.

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Advanced Configuration – Remote Module

Although usually not required, the advanced features may be used to assist with managing the Remote Module or trouble shooting voice or performance issues. The following is a detailed description of the programming areas that would be considered "advanced" to the proper operation of the Remote Module. Please consult the Advanced Configuration section prior to contacting customer support should issues arise.

Advanced Port Setup

The Remote Module Port configuration screen is shown below:

Path: Remote->Configuration->Port

You can also configure some Port Parameter settings using the TMI

TMI Path: (Remote Only)->Set Config->Connect Menu

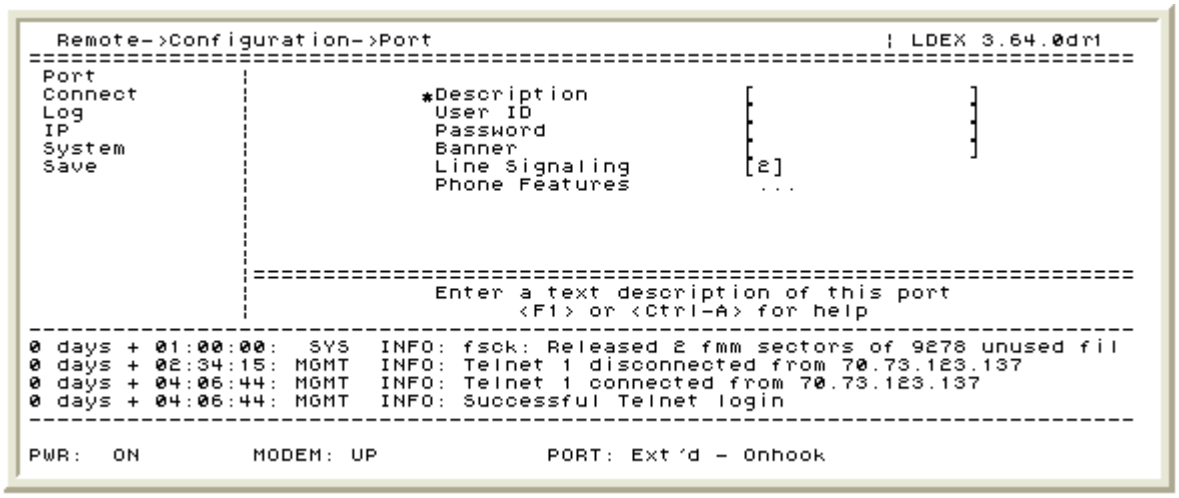

Figure 29: Remote Module – Port Configuration Screen

1. Port **Description** – The port description accepts 16 characters of text to identify the user of a specific port. Typically the user's name would be entered (i.e. John Smith).
2. Setting a **User ID** – A User ID "maps" a specific port on the Remote Module to a specific port on the Switch Module. The default Switch Module User ID is the port number, 1. This feature is typically used when connecting to one of Citel's multi-user devices such as a PBXgateway. If this remote is connecting to a multi-user device refer to the *System Administrator's Guide* of the PBXgateway for more information.
3. Setting a Connect **Password** – A Connect Password restricts access to the telephone port and is typically used in conjunction with the User ID feature. If the password is not set on the Switch Module then the user will not be prompted to enter password. If the Password is set on the Switch Module then the user will have to manually input the password when connecting or configure the password in the Remote->Configuration->Password section of the MI.
4. Displaying text using **Banner** – The Banner field can be used to display simple messages on a telephone equipped with 2-line display. The text appears when the user is off-line (not connected to the Switch Module). Typically, the company name is displayed. A maximum of 15 characters can be entered in this field.
5. Configuring the **Line Signaling** (Nortel Norstar PBX only) – On some installation environments a clicking noise may be present in the audio path. This is caused by

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errors in the duty cycle of the signaling wave form. This setting can be adjusted from 0 to 7. Some experimentation may be required to eliminate any audio issues that may arise.

6. Enabling **Active Call Monitoring** (Nortel Norstar PBX only) in the Phone Features menu – If the user is monitoring another station for call activity this should be set to Enabled.

Advanced Connect Parameters - Modem Settings

Configuring the **Modem Settings** – Set the Modem settings for connection to the Switch Module from the Remote Module:

Path: Remote->Configuration->Connect

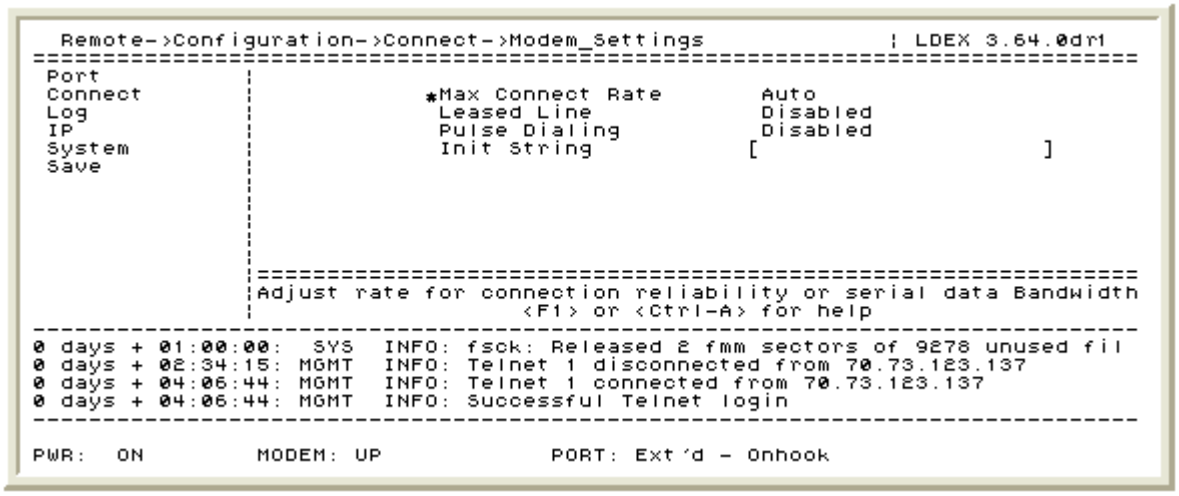

Figure 30: Remote Module – Modem Settings Configuration Screen

Modem Settings configuration may require changing from salue based on Line type, Line conditions and specific connection requirements.

a) *Max Connect Rate* – The Switch and Remote Module communicate by transmitting signals between the switch location and the remote location over an analog phone line. When set to Auto the first attempt at connecting will be at 21600 bps which provides the most stable voice environment. If required, the connect rate can be set to 33.6Kbps, 31.2Kbps, 28.8Kbps, 26.4Kbps, 24Kbps, 21.6Kbps, 19.2Kbps and 16.8Kbps. If having connection problems try a lower rate than 21600 bps.

b) *Leased Line* – An analog leased line is a telephone line type offered by the telephone service provider (CO) and would be a dedicated line between the Switch and Remote Module (not a "dialup" connection). A standard analog line is the default setting.

c) *Pulse Dialing* – An older type of analog line that was used with the rotary dialing phone type. The default is Tone dialing.

d) *Init String* – The Switch and Remote Module initialization string is based on the standard modem AT Command set. Any AT commands can be added to comply with any corporate standards or requirements.

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Advanced Connect Parameters

The Remote Module Connect configuration screen is shown below:

Path: Remote->Configuration->Port

TMI Path: (Remote Only)->Set Config->Connect Menu->Dialback

When Dialback is enabled you must also enter the Remote Number on the Remote Module. This number is passed on initial connection and then dialed by the Switch Module to initiate the connection from the Switch Module side.

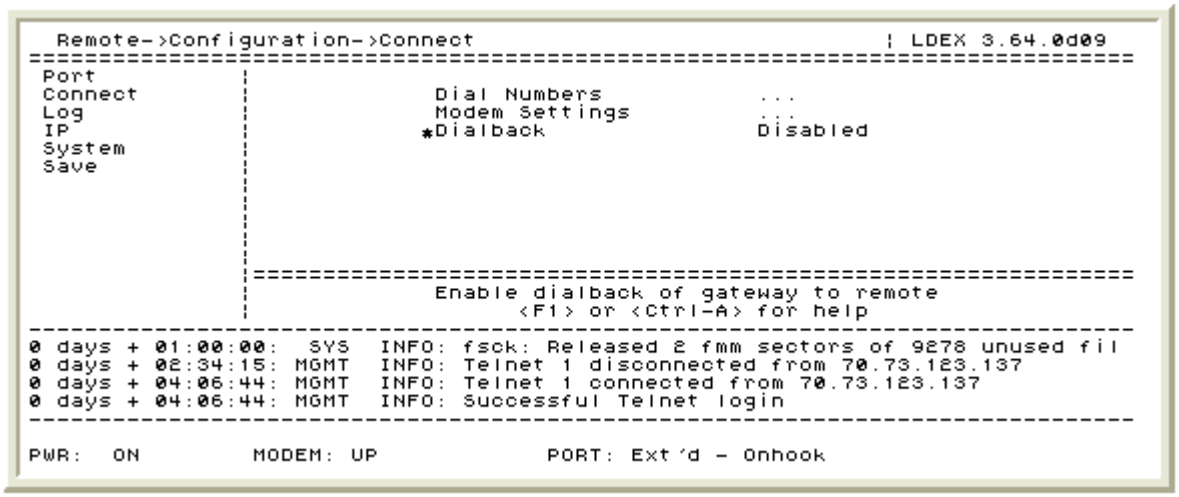
Remote->Configuration->Connect
LDEX 3.64.0d09
Port
Connect
Log
IP
System
Save
Dial Numbers ...
Modem Settings ...
*Dialback Disabled
Enable dialback of gateway to remote
<F1> or <Ctrl-A> for help
0 days + 01:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9278 unused fil
0 days + 02:34:15: MGMT INFO: Telnet 1 disconnected from 70.73.183.137
0 days + 04:06:44: MGMT INFO: Telnet 1 connected from 70.73.183.137
0 days + 04:06:44: MGMT INFO: Successful Telnet login
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 31: Remote Module – Connect Parameters Screen

1. Enabling **Dialback** – The Dialback feature is used to ensure dialing charges are accrued at the corporate office where the PBX is located. When the Switch Module detects a connection attempt by the Remote Module it will automatically dial back the Remote Module. This ensures that any line charges will be billed to the corporate office and not the remote location. You must enter the Remote Number under the Dial Numbers menu for Dialback to work correctly.

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Advanced IP Parameters – LAN Address

Prior to the administrator having remote access to the Switch Module and Remote Module the system IP parameters must be configured. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Switch Module and Remote Module. The Remote Module LAN Address configuration screen is shown below:

Path: Remote->Configuration->IP->LAN->Address

TMI Path: (Remote Only)->Set Config->IP Menu

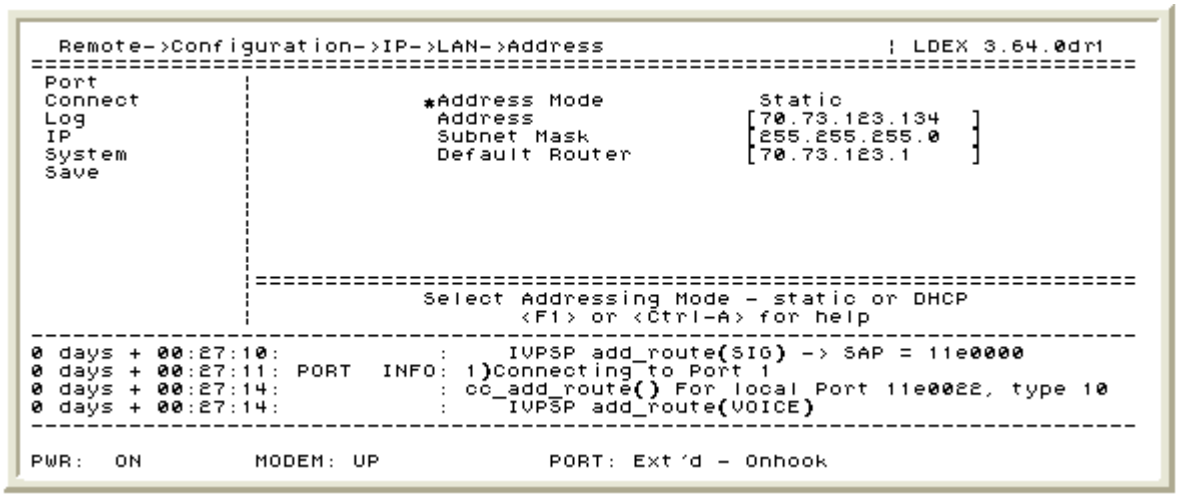

Figure 32: Remote Module – LAN Address Configuration Screen

1. Setting the **Address Mode** – In Static mode the Remote Module will use the IP information entered in the Address, Subnet Mask and Default Router fields. In DHCP mode (Dynamic Host Configuration Protocol), if the corporate network is equipped with a DHCP server, the address will be assigned automatically. The unit's IP address is displayed with the system information (***Path:*** Remote->Status->System->General Info) and can be viewed at any time.
2. Configuring the unit's IP **Address** – A valid IP address for the Remote Module must be entered in order for it to operate on the IP network. The IP address should be obtained from the corporate IT Administrator prior to configuring the Remote Module.
3. Configuring the **Subnet Mask** - A valid subnet mask for the Remote Module must also be entered in order for it to operate on the IP network. The subnet mask should be obtained from the corporate IT Administrator prior to configuring the Remote Module.
4. The **Default Router** – A valid default router address must be entered to reach IP hosts not on this same IP sub-network. The default router should be obtained from the corporate IT Administrator prior to configuring the Switch Module.

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Advanced IP Parameters – Telnet and FTP

Prior to the administrator having remote access to the Switch Module and Remote Module the system IP parameters must be configured. The following is a detailed description of the programming areas that would be considered "essential" to the proper operation of the Switch Module and Remote Module. The Remote Module Telnet and FTP configuration screen is shown below:

Path: Remote->Configuration->IP->LAN

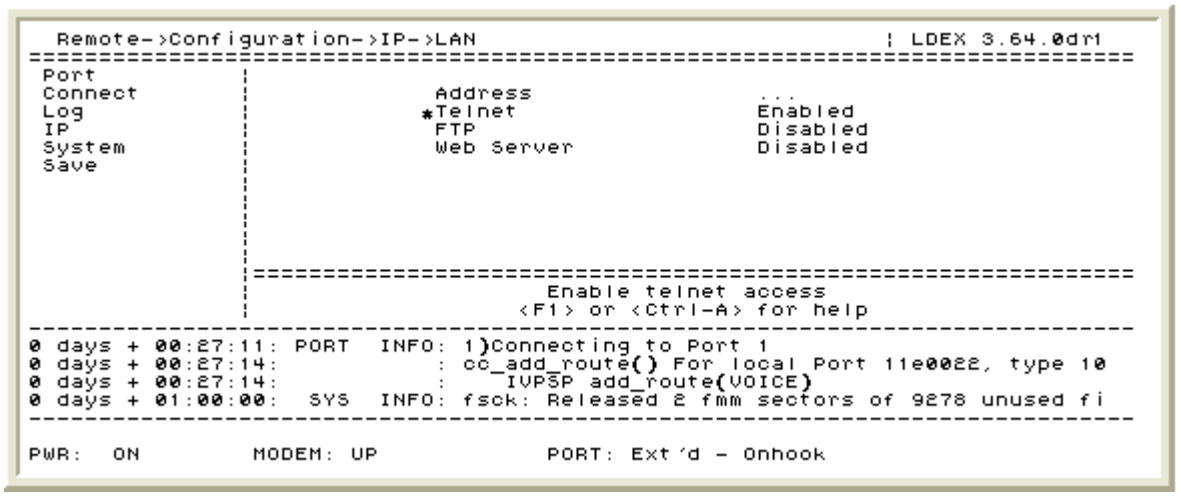

Figure 33: Remote Module – Telnet, Rlogin and FTP Configuration Screen

1. **Telnet** – The Switch Module can be accessed remotely by use of a standard Telnet session. By default Telnet is enabled.
2. **FTP** – File Transfer Protocol (FTP) is used primarily during the upgrade process. For security reasons this feature is disabled on default. FTP should remain disabled when not upgrading a unit or unless otherwise instructed to by a Customer Support representative.

FTP should always be disabled when not performing a software upgrade or file transfer to and from the units.

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Advanced IP Parameters – DNS

This parameter allows the System Administrator to find the Remote Module by an assigned name. Domain Name Server (DNS) is used in IP networks for translating a host domain name into an IP address. This information is stored in a DNS server. The information for these fields should be obtained from the corporate IT Manager. Enabling DNS on the Remote Module allows the System Administrator to search for it by its name and/or IP address. The DNS parameter is NOT enabled by default. The Remote Module DNS (Domain Name Server) configuration screen is shown below:

Path: Remote->Configuration->IP->DNS

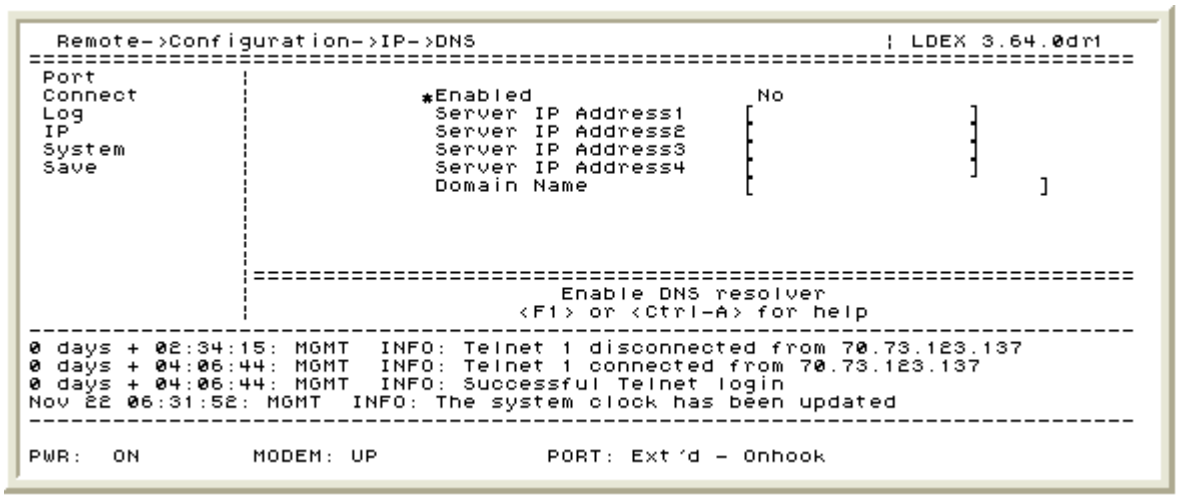

Figure 34: Remote Module – DNS Configuration Screen

1. Setting DNS to **Enabled** – 'Yes' will enable DNS and 'No' will disable DNS.
2. The **Server IP Address1** (to 4) – Enter the address(es) of the DNS servers up to 15 characters. This information should be obtained from the company IT Administrator prior to configuring the unit.
3. Entering the **Domain Name** – The domain name (i.e. Citel) is entered in this field to a maximum of 20 characters. This information should be obtained from the company IT Administrator prior to configuring the unit.

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Advanced System Parameters – System Settings

The Remote Module system configuration screen is shown below:

Path: Remote->Configuration->System

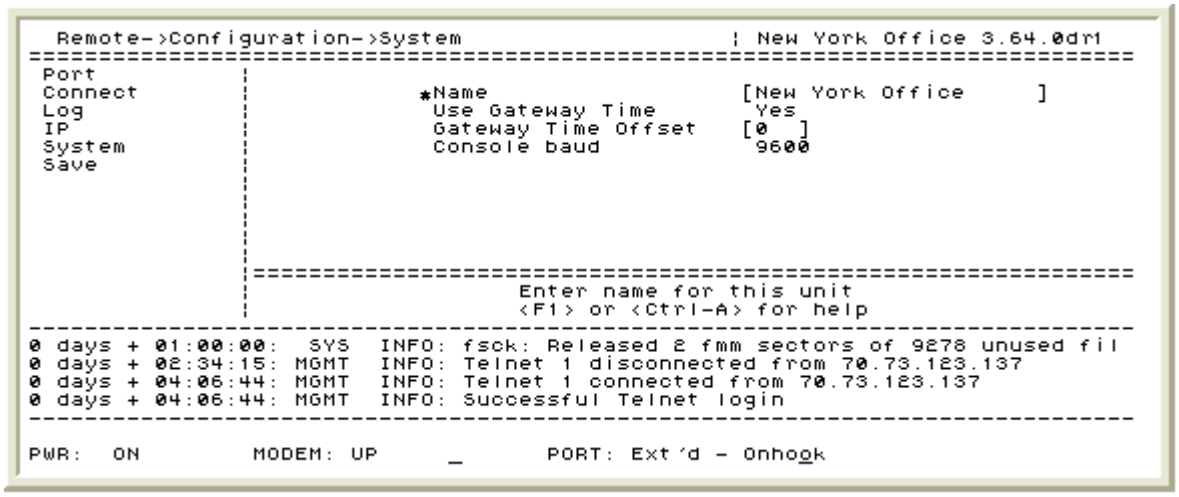
Remote->Configuration->System | New York Office 3.64.0dr1
Port
Connect
Log
IP
System
Save
*Name [New York Office]
Use Gateway Time Yes
Gateway Time Offset [0]
Console baud 9600
Enter name for this unit
<F1> or <Ctrl-A> for help
0 days + 01:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9278 unused fil
0 days + 02:34:15: MGMT INFO: Telnet 1 disconnected from 70.73.123.137
0 days + 04:06:44: MGMT INFO: Telnet 1 connected from 70.73.123.137
0 days + 04:06:44: MGMT INFO: Successful Telnet login
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 35: Remote Module – System Settings Configuration Screen

1. Assigning a system **Name** – The Name field in the Remote Module is used for identification purposes only and appears next to the software revision (see above). This makes it easier for an administrator when managing multiple sites. Typically the geographic location of the unit is input "Sally's Home Office" for example. Any text up to 15 characters can be input in this field.
2. Configuring to **Use Gateway Time** – The log files for the Remote Module can be stamped using the locally configured time or the time configured on the Switch Module.
3. Setting the **Gateway Time Offset** – Enter a value that represents the time difference between the Switch Module and the Remote Module. This is used to compensate for the time difference between cities. For example, if the Switch Module is at a corporate office in Seattle and the Remote Module is at a branch office in New York set this value to +3. This ensures that the log time stamp and the telephone display use the correct time.
4. Changing the **Console baud** – This is the speed at which information is transmitted to and from the Switch Module through the console port labeled "COMM" on the back of the unit. The baud rate can be changed to 2400, 4800, 9600, 19200 or 38400. The default is 9600.

Advanced System Parameters – Administrator's Password

An administrator's password should be set to restrict unauthorized access to the Remote Module. Individual port passwords are not affected.

Path: Remote->Utilities->System->Set Password

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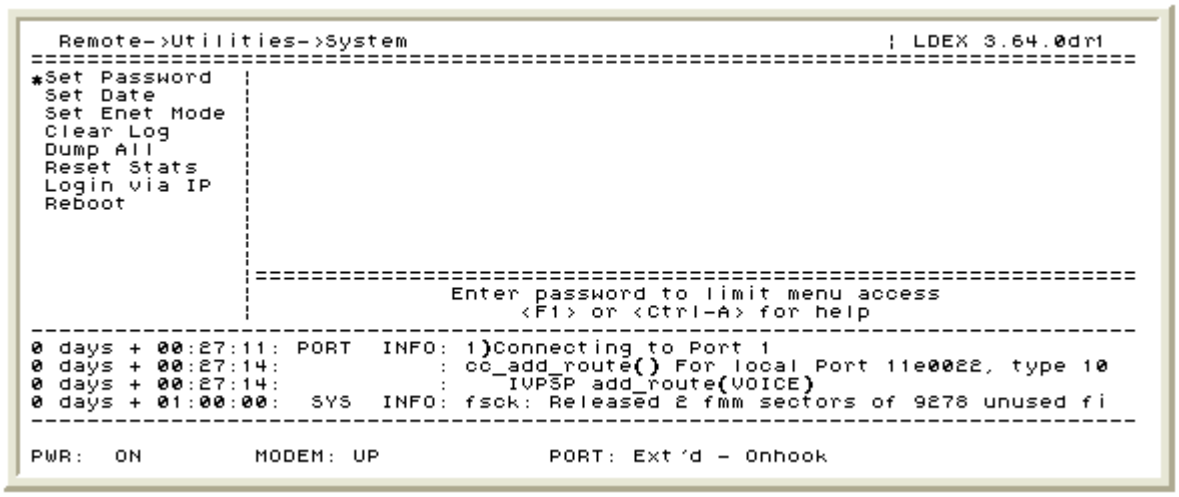
Remote->Utilities->System
LDEX 3.64.0dr1
*Set Password
Set Date
Set Enet Mode
Clear Log
Dump All
Reset Stats
Login via IP
Reboot
Enter password to limit menu access
<F1> or <Ctrl-A> for help
0 days + 00:27:11: PORT INFO: 1)Connecting to Port 1
0 days + 00:27:14: : cc_add_route() For local Port 11e0022, type 10
0 days + 00:27:14: : IVPSP add_route(VOICE)
0 days + 01:00:00: SYS INFO: fsck: Released 2 fmm sectors of 9278 unused fi
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 36: Remote Module – Administrator's Password

1. The **Set Password** function - The administrator password can be a maximum of 10 digits and it restricts unauthorized access to the Management Console (MC) and Management Browser (MB). It is important to set an administrator password because the unit's password is blank (no password) by default. Keep the password in a safe place.

An administrator's password should be set to restrict unauthorized access to the Remote Module. If the administrator password is lost or forgotten please contact a customer representative at 1-877-248-3587 or support@citel.com on how to reset the password.

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Advanced System Utilities – Time and Date

The Remote Module utilities configuration screen is shown below:

Path: Remote->Utilities->System->Set Date

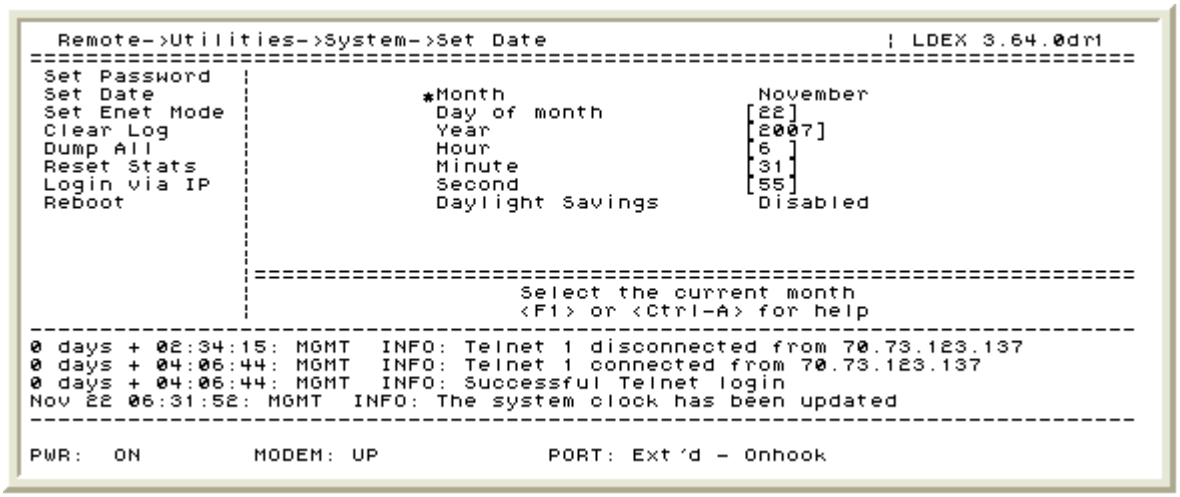
Remote->Utilities->System->Set Date
LDEX 3.64.0dr1
Set Password
Set Date
Set Enet Mode
Clear Log
Dump All
Reset Stats
Login via IP
Reboot
*Month November
Day of month [22]
Year [2007]
Hour [6]
Minute [31]
Second [55]
Daylight Savings Disabled
Select the current month
<F1> or <Ctrl-A> for help
0 days + 02:34:15: MGMT INFO: Telnet 1 disconnected from 70.73.183.137
0 days + 04:06:44: MGMT INFO: Telnet 1 connected from 70.73.183.137
0 days + 04:06:44: MGMT INFO: Successful Telnet login
Nov 22 06:31:52: MGMT INFO: The system clock has been updated
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 37: Remote Module – Time and Date Configuration Screen

1. **Set Date** - Adjust the fields to show the correct time and date.

The Daylight Savings field has been updated to reflect the new DST (Daylight Savings Time) changes in North America for 2007 as per the Energy Policy Act of 2005.

The 1100A units do not have a real time clock and the Time and Date (for the Remote and Gateway Modules) will not remain accurate over long periods of time. The Digital phone time and date is controlled by the PBX and not affected by the Time and Date stored on the Remote and Gateway Module.

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6 CONNECTING AND DISCONNECTING THE LINK BETWEEN THE REMOTE AND GATEWAY

This chapter discusses the basic information on connecting and disconnecting the Extender session from the 1100A Remote 1100A module to the 1100A Switch Module.

Steps to Connect

1. Exit the Telephone Management Interface phone menu. Press 1 (**Prv**) key until you return to the "Exit Admin Menu", then Press 2 (**OK**)
2. "Connect, Press 1" menu should be displayed.
3. Press 1 to initiate the connection.
4. If User ID is not configured you will be prompted to enter a User ID. Enter it now (1 is the default ID).
5. The Office phone number is then dialed and the modules will connect. The connection process will take around 20 seconds during this time the phone will display connection status messages "Connecting", "Ringing", and finally "Modem syncd".
6. If configured you may be prompted to enter a password. If password is valid a "Password OK" message will be displayed.

The phone will initialize (this time varies based on PBX Type). Once you see the time and date on your phone LCD display initialization is complete and your phone is Extended ready to make and receive calls.

Steps to Disconnect

1. First end all active calls on your phone.
2. Access the online Telephone Management Interface phone menu by pressing the 'HOLD' key four times.
3. The phone should display "Disconnect"
4. Press 2 (**OK**) to disconnect, or Press 3 (Next) to be prompted to Re-Connect to Extender Session.
5. If you Press 2 a "Discon Sequence" message will be displayed on the LCD and then Remote LCD should return to the "Connect, Press 1" menu.

The Remote module is now no longer connected to the Switch module, the Extender Session is disconnected.

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7 OTHER MANAGEMENT CONSOLE PARAMETERS

This chapter discusses background information for other parameters within the Management Console (MC). These parameters are primarily used during trouble shooting and the administrator would be instructed by a Customer Support representative on their usage. The optional parameters are listed in alphabetical order.

Begin Test (IP)	
Path	Gateway (Remote) ->Utilities->Diagnostics->Test IP
Description	A test that can be performed that ensures IP communication is working correctly.
Usage	Same as the MS-DOS "Ping" command, it sends packets back and forth to the unit specified by the IP Address parameter field (directly below the Begin Test parameter). After the test is complete messages describing the results will be presented
Dependencies	none
Clear Log	
Path	Gateway (Remote) ->Utilities->System
Description	Clears the log buffer of events on the Switch Module and/or the Remote Module. *WARNING:* Clearing the log cannot be undone. Messages are permanently removed.
Usage	Used during trouble shooting. It clears the log of any unnecessary log messages when tracking issues.
Dependencies	none
Dump All	
Path	Gateway (Remote) ->Utilities->System
Description	This parameter will "dump" the entire log file to the screen to allow a terminal emulation program (i.e. HyperTerminal) to capture the text.
Usage	Allows the administrator to capture logs and system information should an anomaly occur.
Dependencies	A VT100 terminal emulation program on a PC must be running and have the capability of transferring the data to a text file.
Edit Config	
Path	Gateway (Remote) ->Utilities->File
Description	This is a file saved within the flash file system. It contains all the configuration parameters of the Management Console (MC). Changes can be saved without affecting the currently running software image.

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Usage	Used for managing multiple sites. The same configuration file can be transferred to different units if the programming is consistent between devices.
Dependencies	Must use the correct file type (i.e. runtime.cfg)
Initialize (Init) Modem	
Path	Gateway (Remote) ->Utilities->Diagnostics Gateway (Remote) ->Utilities->Diagnostics
Description	This will initialize the internal modem.
Usage	Should be executed if experiencing modem problems.
Dependencies	none
Login Via IP	
Path	Gateway (Remote) ->Utilities->System Gateway (Remote) ->Utilities->System
Description	Allows the administrator to log in to another unit via the IP address.
Usage	Used for remote configuration of the Switch or Remote Module.
Dependencies	Valid IP address must be configured and Telnet must be enabled.
Optimize	
Path	Gateway (Remote) ->Utilities->File Gateway (Remote) ->Utilities->Upgrade
Description	This will "clean up" the internal flash file system for improved performance.
Usage	Should be executed prior to performing a software upgrade or for advanced trouble shooting. *WARNING:* Do not execute on an active system. This may cause the flash file system to become corrupt rendering the Switch Module or Remote Module inoperable.
Dependencies	none
Priority (Log)	
Path	Gateway (Remote) ->Configuration->Log
Description	Allows for the selection of what log types will be displayed first in the log file.
Usage	Used during trouble shooting. The log message priority can be customized for the level of troubleshooting desired. Log message priorities include: Fatal: Unit is not functioning Error: *Failure* Warning: Problem with unit but still operational Info: Remote session, someone connected Debug: Detailed message Trace: Packet type tracing For example, if the log priority is set to Info, then

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	the only log messages that would *not* be saved are the Debug and Trace messages
Dependencies	none
Reset Stats	
Path	Gateway (Remote) ->Utilities->System
Description	Rests all the system statistical information.
Usage	Used to "clean up" the system statistics and to help pinpoint problems should they occur.
Dependencies	none
Set Enet Mode	
Path	Gateway (Remote) ->Utilities->System
Description	Used to set the Enet network parameters.
Usage	The administrator can set the Enet mode to Auto Detect, 10Mb – Half Duplex, 10Mb – Full Duplex, 100Mb – Half Duplex, 100Mb – Full Duplex
Dependencies	Valid IP address must be configured and Telnet must be enabled.
Size (Log)	
Path	Gateway (Remote) ->Configuration->Log
Description	When the log file becomes full the log messages become overwritten by new messages. The administrator has the ability to increase the log size if required. Accepted log file sizes are 4096 to 131072.
Usage	Limits or increases the number of log messages.
Dependencies	none

Table 3: Other IP Parameters

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8 USING SYSLOG

Configuring Syslog

The Syslog feature allows for the writing of the log file information to a centralized logging server if required. System trouble shooting is performed by configuring the log to report specific events in a prioritized manner. The Syslog configuration screen is shown below:

Path: Gateway (Remote) ->Configuration->IP->Syslog

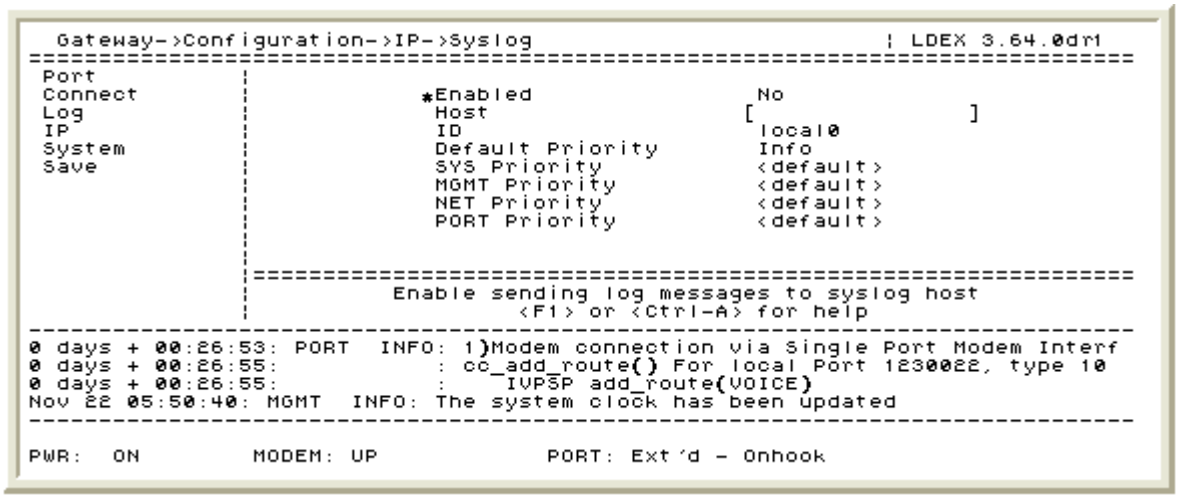
Gateway->Configuration->IP->Syslog ! LDEX 3.64.0dr1
Port
Connect
Log
IP
System
Save
*Enabled No
Host [ ]
ID local0
Default Priority Info
SYS Priority <default>
MGMT Priority <default>
NET Priority <default>
PORT Priority <default>
Enable sending log messages to syslog host
<F1> or <Ctrl-A> for help
0 days + 00:26:53: PORT INFO: 1)Modem connection via Single Port Modem Interf
0 days + 00:26:55: : cc_add_route() For local Port 1E30022, type 10
0 days + 00:26:55: : IVPSP add_route(VOICE)
Nov 22 05:50:40: MGMT INFO: The system clock has been updated
PWR: ON MODEM: UP PORT: Ext'd - Onhook

Figure 38: Configuring Syslog

1. **Enabled** Yes/No – Enabling allows for the log data to be written to the Syslog host and disabling turns this feature off.
2. **Host** – This is the IP address that the log file information is to be written to.
3. **ID** – The ID is used to identify the specific unit that the log is being generated from. The range is from "local0" to "local7."
4. **Default Priority** - Allows for the selection of what log types will be displayed first in the log file for the "<default>" setting.
5. **SYS Priority** – Can be left at the default of "Info" or be changed to Fatal, Error, Warning, Info, Debug or Trace.
6. **MGMT Priority** – Can be left at the default of "Info" or be changed to Fatal, Error, Warning, Info, Debug or Trace.
7. **Net Priority** – Can be left at the default of "Info" or be changed to Fatal, Error, Warning, Info, Debug or Trace.
8. **Port Priority** – Can be left at the default of "Info" or be changed to Fatal, Error, Warning, Info, Debug or Trace.

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The log priority definitions:

Log Priority	Definition
Fatal	Unit is not functioning
Error	Failure
Warning	Problem with unit but still operational
Info	General operational information messages
Debug	Detailed message
Trace	Packet type tracing

Table 4: Log Priority Definitions

Third Party Application for Syslog

A third party application is required for receiving the log file information. An application such as Kiwi Syslog Daemon is a freeware Syslog Daemon for Windows. It receives, logs, displays and forwards Syslog messages from hosts such as Citel's EXTender products, routers, switches, Unix hosts and any other syslog enabled device. However, any third party Syslog application can be used.

For the Kiwi Syslog Daemon it is a simple matter of opening the application. The log files will be received immediately (assuming a valid Host IP address has been input). An example of the Kiwi Syslog Daemon application is shown below:

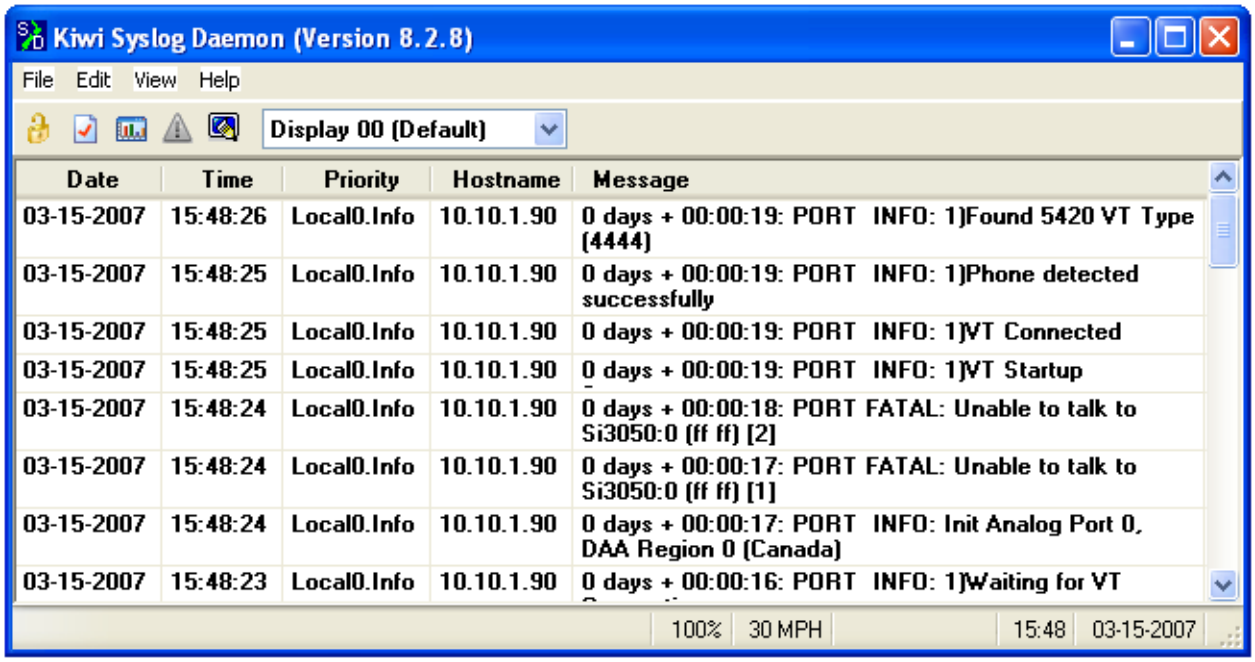
Kiwi Syslog Daemon (Version 8.2.8)
File Edit View Help
Display 00 (Default)
Date Time Priority Hostname Message
03-15-2007 15:48:26 Local0.Info 10.10.1.90 0 days + 00:00:19: PORT INFO: 1)Found 5420 VT Type (4444)
03-15-2007 15:48:25 Local0.Info 10.10.1.90 0 days + 00:00:19: PORT INFO: 1)Phone detected successfully
03-15-2007 15:48:25 Local0.Info 10.10.1.90 0 days + 00:00:19: PORT INFO: 1)VT Connected
03-15-2007 15:48:25 Local0.Info 10.10.1.90 0 days + 00:00:19: PORT INFO: 1)VT Startup
03-15-2007 15:48:24 Local0.Info 10.10.1.90 0 days + 00:00:18: PORT FATAL: Unable to talk to Si3050:0 (ff ff) [2]
03-15-2007 15:48:24 Local0.Info 10.10.1.90 0 days + 00:00:17: PORT FATAL: Unable to talk to Si3050:0 (ff ff) [1]
03-15-2007 15:48:24 Local0.Info 10.10.1.90 0 days + 00:00:17: PORT INFO: Init Analog Port 0, DAA Region 0 (Canada)
03-15-2007 15:48:23 Local0.Info 10.10.1.90 0 days + 00:00:16: PORT INFO: 1)Waiting for VT
100% 30 MPH 15:48 03-15-2007

Figure 39: Kiwi Syslog Daemon

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9 TROUBLESHOOTING

This chapter provides information to locate, isolate, and correct functional problems with the Switch Module and Remote Module should the need arise.

This chapter is divided into six principal areas for troubleshooting:

Baseline Checklist – A list of simple checks used as a starting point for troubleshooting the devices. It covers basic installation requirements, wiring info and network information.
Status LEDs – Single and tri-color LEDs, located on the front and back panels of each unit. The LEDs blink in specific sequences indicating the unit status during Power-Up as well as providing status information on the System and Ethernet (LAN) connections during normal operations
Troubleshooting Procedures – A set of procedures providing step-by-step instructions to identify and rectify problems.
Status Menus – Diagnostic menus providing statistical information on all telephone ports, Connect stats, Log and IP stats and general System information.
Remote Module Phone System Messages – A chart listing error messages that are displayed on the Remote Module phones.

Baseline Checklist

The Baseline Checklist is a logical list of items that are associated with an active and operational installation. These items should be checked *BEFORE* you attempt to troubleshoot either the Switch Module or the Remote Module.

If you find any of the items are not as stated, you must correct them and then check the remaining items for both units to verify a complete installation.

Network Checklist

Verify that the existing network, in this case the telephone lines are capable of transmitting and receiving calls. Disconnect the analog lines that are connected to the port labeled "Telco" on the back of the Switch and Remote Modules and connect them to standard analog phones. From the analog phone at the remote location call the phone at the switch location. Confirm that the analog phone on the switch side rings, the call can be answered and that there is adequate voice quality.
Check that the IP address information (IP Address, Subnet Mask, Default Router) for the Switch Module and Remote Module are valid and set correctly for remote configuration of the Switch and Remote Module.
Ensure that the Web Server is enabled if attempting to configure the Switch and Remote Module through the *Management Browser*.

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Switch Module Checklist

Verify that the power supply is plugged into an active AC outlet and that the power cable is plugged into the unit.
Verify that the cables between the unit and the PBX or KTS are secure.
Verify that the cable between the unit and the Telco line are secure.
Verify that the Ethernet cable is connected and that there is an active link status on the Gateway and Network Hub/Switch.
Verify that the PBX port is working correctly when a digital telephone is connected directly to it.
Verify that the correct PBX type selected.

Remote Module Checklist

Verify that the power supply is plugged into an active AC outlet and that the power cable is plugged into the unit.
Verify that the cable between the unit and the Telco line are secure.
Verify that the Ethernet cable is connected and that there is an active link status on the Remote Module and Network Hub/Switch.
Verify that the digital telephone works correctly if connected directly to the PBX port.
Verify that the correct PBX is selected.

Status LEDs

When the units are powered-up, a series of self-diagnostic tests are performed and displayed as a series of LED blinks. The following sections list the different status sequences.

Power Up Sequence

The "Status" LED on the front of the unit will blink for several seconds as the module is initializing. See the next page for the complete list of LED sequences.

Figure 40: Front Panel

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Power up LED Sequence

During power up of the Switch Module and Remote Module the following LED flashing sequences are presented:

Test	LED Status
DRAM Test	Status LED 1 – Green Flicker Status LED 2 – Off PSTN Port LED – Off
Self Test	Status LED 1 – Solid Green Status LED 2 – Off PSTN Port LED – Off
ROM Countdown	Status LED 1 – Solid Green Status LED 2 – Off PSTN Port LED – Green Flicker
Loading Image	Status LED 1 – Green Flashing Status LED 2 – Off PSTN Port LED – Solid Green
Loading Image Successful	Status LED 1 – Solid Green Status LED 2 – Off PSTN Port LED – Solid Green

Table 5: Power up LED Sequence

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Trouble Shooting Procedures

The following procedure provides a step-by-step process for identifying and rectifying installation problems with the Switch Module and Remote Module. Each step is a question requiring a "Yes" or "No" response. Each response has a series of checks or actions necessary to correct the problem.

Prerequisites:

- Both units must be powered-up with some LED blinking patterns visible.
- Both units must be connected to an active network capable of sending and receiving packets.

System Status LEDs

After the units have completed the self-diagnostic tests, is the Status 1 LED on (solid green) on each unit? If the Status 1 LED is not lit, check that the power cable is properly connected. Below is the complete list of the System Status LEDs:

System Status	LED Status
Power off	Status LED 1 – Off Status LED 2 – Off
Hardware problem detected during memory test	Status LED 1 – Off Status LED 2 – Solid Green
Hardware problem detected during Self Test	Status LED 1 – Off Status LED 2 – Solid Green
Memory Tests	Status LED 1 – Green Flicker Status LED 2 – Off
Loading Firmware	Status LED 1 – Solid Green after Flicker Status LED 2 – Off
System firmware load Failed	Status LED 1 – Green Flashing Status LED 2 – Green Flashing

Table 6: System Status LEDs

Port Status LED

After the units have gone through the self-diagnostics tests and loading the runtime image (the unit's software), the telephone port LED should be solid green. This indicates that the telephone port is connected to a digital port on the PBX and to a telephone connected to the Remote Module, but not extended.

1. If the port LED blinks with a green flicker this indicates that the port is enabled but there is a bad connection to the PBX or phones.
2. If the ports are ready, press '1' to connect to the Switch Module. As the telephone is connected the LED will begin to flash slowly. This means that the telephone is enabled but still not in use (on-hook).
3. Check the log messages within the MC for obvious port errors.
4. Are there any messages displayed on the telephones connected to the Remote Module?
5. Place a call using a telephone connected to the Remote Module. As the remote user places a call the LED will begin to flash faster. This means that the telephone is extended and in use (off-hook) by the remote user.
6. Check the wiring to the PBX.

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7. Is the Voice Quality acceptable?

Resetting the Port

Try resetting the port on the Switch Module and Remote Module:

8. To reset the telephone ports:
    a) ***Path:*** Gateway (and Remote) ->Utilities->Diagnostics->Reset Port
    b) Enter port number '1' or 'all' to reset all the port

Below is the complete list of Port Status LEDs:

Port Status	LED Status
Port – Valid phone (Remote Module) or PBX port detected (Switch Module)	Status LED 1 – Solid Green Status LED 2 – Solid Green
Port – Valid phone (Remote Module) or PBX port ***not*** detected (Switch Module)	Status LED 1 – Green Flicker Status LED 2 – Green Flicker
Phone EXTended and onhook	Status LED 1 – Green with 'off' Blink Status LED 2 – Green with 'off' Blink
Phone EXTended and offhook	Status LED 1 – Green Flashing Status LED 2 – Green Flashing

Table 7: Port Status LEDs

Test the Telco Connection

If the units are installed properly, but you still cannot connect the remote telephone to the Switch Module, you should test the Dial Numbers.

1. Connect the Remote Module's telephone line to an analog phone
2. Connect the Switch Module's telephone line to an analog phone also
3. Call the Switch Module's telephone number from the Remote Module's location. Confirm that the phone rings and that the voice path is established.
4. Make the necessary changes to the Dialback numbers if required. Reconnect the analog lines to the Switch and Remote Modules and attempt to connect.

Test the IP Connection

If the units appear to be installed properly, but you still cannot configure the units from a remote location, you should test the IP connection. This test will not run if the telephone is off-hook (in an active call).

1. Access the MC.
2. Access the diagnostics menu via Gateway (Remote) ->Utilities->Diagnostics->Test IP
3. Using the default values, select "Begin test." This test will send voice packets to the offsite unit and will count the packets as they are sent back.
4. The MC will run the test and, upon its completion, a test results window appears as shown below.

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```
################################################
#                                              #
# ----192.168.101.56 PING Statistics----       #
# 5 packets transmitted, 5 packets received    #
# round-trip (ms)  min/avg/max = 0/1/5         #
#                                              #
################################################
```

Figure 41: Test Results Window

5. From a PC on the remote network make sure that you can reliably ping the Switch Module.
6. From a PC on the corporate network, make sure you can reliably ping the Remote Module on the remote network

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Echo Problems

Understanding and Correcting Echo Problems

The Switch Module and Remote Module employ the industry standard G.165 echo canceller with some proprietary improvements to help eliminate or reduce echo. However, it is not possible to cancel all instances of echo 100% of the time. It should be noted that echo perceived by extended PBX users will not be perceived by the party on the other end of the call.

Remote Module Impact on Echo

Because the Remote Modules deal exclusively with digital audio on the line side of a PBX, they cannot cause any echo. However, if you experience any echo from your connection to the PSTN (Public Switched Telephony Network), the Remote Module application could make it noticeable because of increased delay in the audio path. For example, if echo occurs on a line after only a few milliseconds, your ear cannot detect the echo. However, if the echo occurs after 100, 50, or even 20 milliseconds, your ear will likely detect the problem. The G.165 echo canceller can cancel echo only up to certain limitations.

If you experience echo on all external calls, you probably have a problem with your PSTN analog lines connected to your PBX. Analog lines that are out of specification can generate a great deal of echo when interfacing with your PBX. Non-extended PBX telephones may not perceive the echo, due to the fact that echo without delay does not *sound* like echo.

If you have a noticeable echo problem, you should look into the following:

Cause:

The most common causes of consistent echo on all external calls are analog trunk lines that are out of specification, or a problem with the termination within the PBX. Most commonly there is an impedance mismatch between the analog line and your PBX. Also, the db level of the analog circuit may be too high. Analog circuits that are "hot" are a common cause of echo. Again, that echo may not be perceived on non-extended telephones, but that is only because there is no delay.

Possible solution:

If you have analog lines, you should consult your local telephone company and ask for the exact specifications of that line. They may need to go onsite to measure the characteristics of your analog circuits. If you only experience echo occasionally on external calls, your system is probably fine. The echo probably only occurs when calling to or receiving calls from a party that is using:

- **analog lines**
- **a cell telephone**
- **analog trunks on their telephone system. In this case there is little you can do. The echo canceller included with the Remote Modules will usually cancel this echo after a second or two, but occasionally the echo goes beyond its capabilities. However, it should be noted that the party on the other end of the call will not experience this echo. If you experience a slight echo on all external calls, but it goes away after a second or two, that is normal with analog trunk lines. If you have analog trunks on your PBX, the echo canceller frequently takes a second or two to detect levels of what is echo and what is voice, and then it starts to cancel the echo. The only way to eliminate that situation is to replace your analog trunks with digital trunk lines.**

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Status Menus

The following are examples of the various status information screens available to assist with trouble shooting should any issues with voice quality or system performance arise.

Connect Info

This screen will list general connection statistics. Certain counts, like Lost Signal, resync, far resync, retries and timeouts can indicate problems with connection.

Path: Gateway (Remote) ->Status->Connect->Connect Info

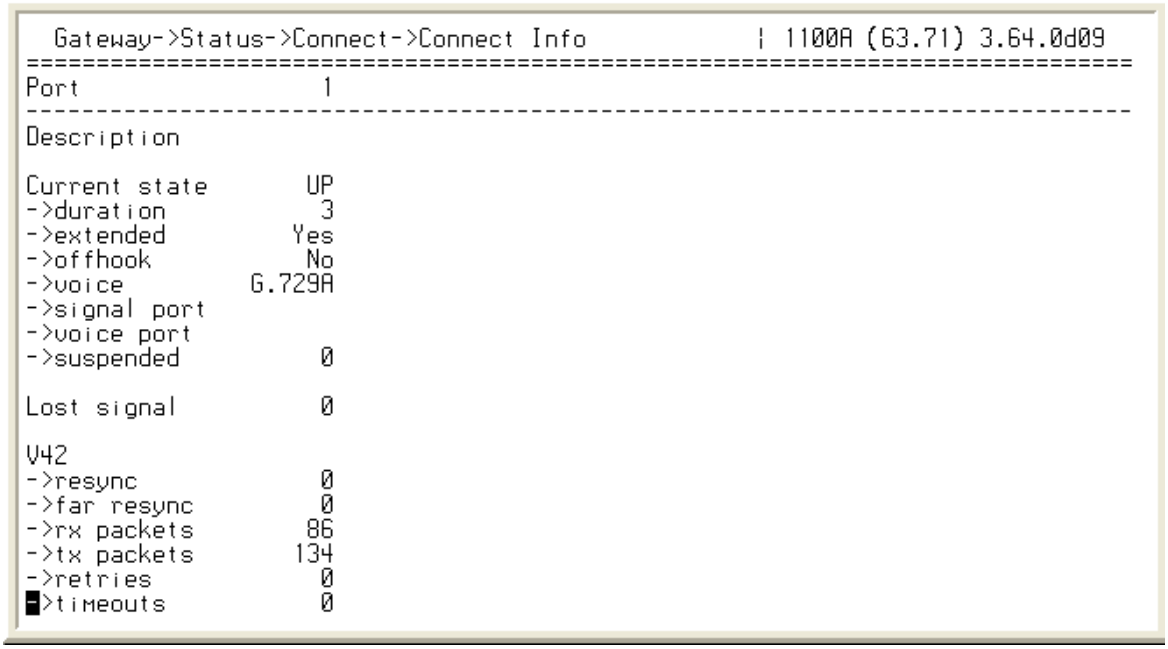

Figure 42: Connect Info Status Screen

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General Information Screen

This will list all the pertinent system information. The information shown here is used to verify software release, IP information, and system parameters.

Path: Gateway (Remote) ->Status->System->General Info

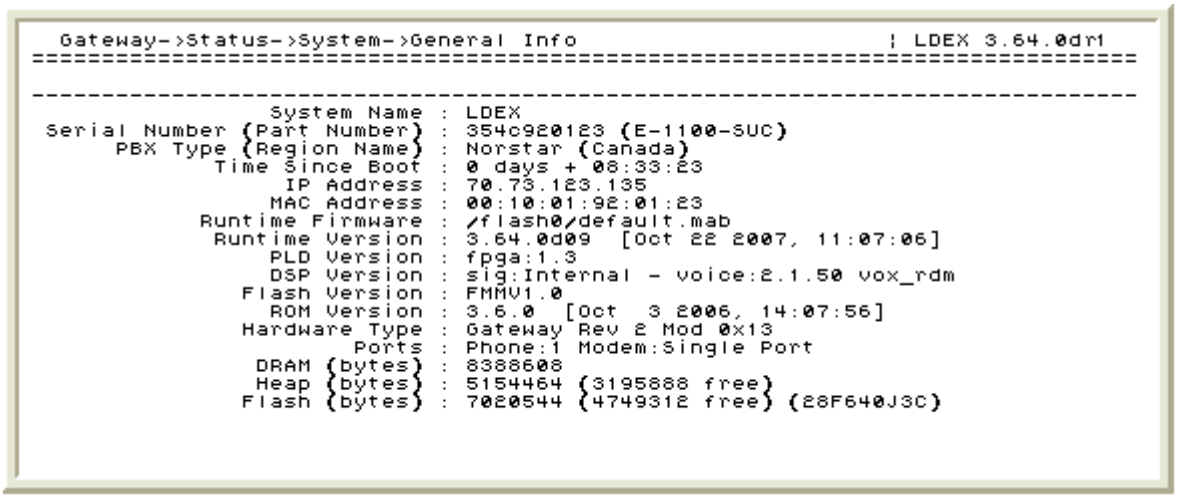
Gateway->Status->System->General Info | LDEX 3.64.0dr1
System Name : LDEX
Serial Number (Part Number) : 354c920123 (E-1100-SUC)
PBX Type (Region Name) : Norstar (Canada)
Time Since Boot : 0 days + 08:33:23
IP Address : 70.73.123.135
MAC Address : 00:10:01:92:01:23
Runtime Firmware : /flash0/default.mab
Runtime Version : 3.64.0d09 [Oct 22 2007, 11:07:06]
PLD Version : fpga:1.3
DSP Version : sig:Internal - voice:2.1.50 vox_rdm
Flash Version : FMMV1.0
ROM Version : 3.6.0 [Oct 3 2006, 14:07:56]
Hardware Type : Gateway Rev 2 Mod 0x13
Ports : Phone:1 Modem:Single Port
DRAM (bytes) : 8388608
Heap (bytes) : 5154464 (3195888 free)
Flash (bytes) : 7020544 (4749312 free) (28F640J3C)

Figure 43: General Info Status Screen

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Remote Module Phone System Messages

Error messages will appear on the telephone set at the remote site when a connection attempt fails. The telephone will usually show "Connect Error" followed by one of the following prompts (not *all* messages are preceded by "Connect Error"):

Message	Description	Action
Already Connected	Remote port is already connected	Reset port on Switch Module (or PBXgateway)
Assigned port Busy	The Switch Module port or PBXgateway port is in use by another user	Wait until port becomes available or reset the port on the Switch Module and try to reconnect
Assigned port Down	The Switch Module port is not available due to problems with the port (port LED shows green flicker)	Check physical connection at the Switch Module
Connect rejected	The PBX or KTS rejects the connection attempt	Verify connect password Check network links Attempt to reconnect
Connect Timeout	Remote cannot connect to the Switch Module	Check the network connection on the Switch Module
Network Disabled	The network device is not connected, is being used, or is not active	Check network link and device
Network Down	The network device has a problem	Check network link and device
Network in Use	The network device is being used by another device	Reset the ports and attempt to reconnect
Network not ready	The network device is not ready for use	Ensure network devices are working properly

Table 8: Remote Module Phone System Messages

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10 CONNECTING TO OTHER CITEL PRODUCTS

The Switch Module and Remote Module can also connect with other Citel Technologies EXTender products. Some EXTenders offered by Citel are based on the same configuration Management Interface as described in this document. Other single user EXTenders use phone menu or console to exclusively configure unit.

The other products discussed are single and multi-port versions that offer at least the same features and functionality as the Switch Module and Remote Module described in this document. For details on the full EXTender product line refer to www.citel.com or contact Sales at 1-888-454-5828.

Connecting an 1100A Remote Module to a PBXgateway II Switch Module

When the installation requires multiple EXTenders (Remote Modules) to connect to a Switch Module or PBXgateway the following *MUST* be configured properly for a successful connection:

1. **User ID**s on the Gateway and Remote Module *must* be configured
   - ***Path:*** **Gateway (and Remote) ->Configuration->Port or (Remote Phone Menu)-> Set Config-> Connect menu -> User ID**
2. **Port Matching** on the Gateway should be disabled.
   - ***Path:*** **Gateway ->Configuration->Connect**

Connecting an 1100A Remote Module to an 1000 Switch (Office) Module

When the installation requires an 1100A Remote module to connect to a 1000 Switch Module the following MUST be configured properly for connection.

1. **User ID**s on the Switch (Office) Module and Remote Module *must* be configured. The 1000 Switch has a User ID range of 00 thru 99. If passwords are not enabled then you can use any User ID in this range and when you connect you will not be prompted to enter a password. If passwords are configured you need to match the User with the password
   - **For the Switch Module configuration.** ***Path:*** **Switch Module->Configure System->Passwords (again only need to verify if passwords enabled and password for desired User ID).**
   - **For the Remote Module (1100A) User ID** ***Path:*** **Remote ->Configuration->Port or (Remote Phone Menu) ->Set Config-> Connect menu -> User ID**
   - ***Password Path:*** **Remote ->Configuration->Port**

Connecting an 1000 Remote Module to an 1100A Switch Module

When the installation requires a 1000 Remote module to connect to an1100A Switch module the following MUST be configured properly for connection. The 1000 Remote can be configured User ID of numbers of only of a size that is the maximum of the 1100A.

1. **User** IDs on the Gateway and Remote Module *must* be configured

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- ***Path:*** **Gateway ->Configuration->Port**
- ***Path:*** **(1000 Remote phone menu) Set Misc parms -> Set User ID**

Using Passwords with 1000 units

The 1100A units have configurable passwords. The 1000 units have passwords always enabled for some protocols (Definity) or ability to enable or disable passwords on other protocols (Meridian and Norstar). Please see original manuals for 1000 units for details.

The 1000 unit passwords are two parts. The first two digits are the User ID. The remaining digits are the password for that User ID. You must 'break-up' this password and configuring your 1100A (either Remote or Gateway) accordingly, the 2 digits in the User ID and the remaining digits in the password.

The 1000 units can only use numerical values for passwords.

Software Compatibility

PBX Type	Switch Module Type	Software Version	EXTender Type	Software Version	Connect Type
Definity	PBXgateway II	V2.16	EXTender 1100A	V3.64	PSTN
	EXTender 1000U Extender 1000PLUS	V2.10r5	EXTender 1100A	V3.64	PSTN
	EXTender 1100A	V3.64	EXTender 1000U Extender 1000PLUS	V2.10r5	PSTN
Magix	Only 1100A supported		Only 1100A supported		
Meridian	PBXgateway II	V2.16	EXTender 1100A	V3.64	PSTN
	EXTender 1000U Extender 1000PLUS	V2.10r5	EXTender 1100A	V3.64	PSTN
	EXTender 1100A	V3.64	EXTender 1000U Extender 1000PLUS	V2.10r5	PSTN
Norstar	EXTender 1000U Extender 1000PLUS	V2.10r5	EXTender 1100A	V3.64	PSTN
	EXTender 1100A	V3.64	EXTender 1000U Extender 1000PLUS	V2.10r5	PSTN

Table 9: Software Compatibility Table

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11 File Management and System Upgrades

Flash Files

The Switch Module and Remote Module contain a flash file system to store basic configuration files, the actual firmware and the instructions necessary for starting the units. The flash memory system retains stored data even with no external power applied.

Access to the flash file system is gained using a PC (FTP or Telnet access via LAN). FTP must be enabled, if that is the method you are using, and an administrator's password should be configured, to control access.

Firmware images stored in the flash file system are saved with extension ".mab." These files use binary format.

Configuration files stored in the flash file system are saved with ".swt" extensions for the Switch Module and ".rem" extensions for Remote Module. All changes you make to the configuration must be saved to the flash file to be applied. The MC prompts you to save changes when necessary.

Call Back files stored in the flash file system are saved with the ".cbk" extension. They contain specific information for the Switch Module and Remote Module boot process (IP addressing, active configuration file, firmware for boot). The Switch Module saves ".cbk" files to allow it to contact remote users that are currently disconnected. This file is also used for Remote Module Login capabilities.

Configuration File Management

Changing the Active Configuration File

When the Switch Module or Remote Module is powered-up, the flash file system loads a configuration file – ".rem" (Remote Module) or ".swt" (Switch Module) – which contains all parameters necessary for operation. You may change this ".rem" or ".swt" file so that a different set of parameters loads.

The default configuration file shipped with the units is "runtime.rem" or "runtime.swt." To change this go to Gateway (Remote) ->Utilities->Upgrade->Config File. Select an existing ".rem" (Remote) or ".swt" (Gateway) file from the list displayed. The display reads "Change Configuration file to ….." Enter [Y]es or [N]o. Assuming you type "[Y]es" to change the configuration file, you are prompted to reboot.

This change will not take effect without a reboot. All changes made to the Switch Module or Remote Module parameters will be saved to the file you selected.

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Edit Non-active Configuration Files

The Switch Module and Remote Module can be used in different applications requiring different parameters. You may need to set up separate configuration files to accommodate custom parameters for each application.

The ability to modify any non-active configuration file enables you to quickly set up new units based on existing configuration parameters.

To edit the "active" configuration file, use the "Configuration" menu. Go to Gateway (Remote) ->Utilities->File->Edit Config

- Type "r" for a Remote file or "g" for a Gateway file.
- Select a configuration file from those available files. Press Enter.
- Modify the parameters as required.
- Select "save" and press Enter to save changes.
- A message is displayed asking you to confirm that you want to save your changes to the file you selected earlier. Type "[Y]es" to save the changes to that file, "[N]o" to discard your changes or "[S]pecify" to specify a different file name

Creating a New Configuration File

To create a new configuration file go to Gateway->Utilities->File->Edit Config.

- Type "r" for a new Remote file or "g" for a new Gateway file.
- Select <new file> from the list.
- Type a name for the new file. Do not add an extension – that is added automatically. Press Enter.
- File names must be a maximum of 12 characters.
- Modify parameters as required.
- Select "save" and press Enter to save changes.
- A message is displayed asking you to confirm that you want to save your changes to the file you selected earlier. Type "[Y]es" to save the changes to that file, "[N]o" to discard your changes or "[S]pecify" to specify a different file name

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Upgrading the Software

The upgrade process involves three phases. These should be executed in the following order:

1. File Management. This phase includes:
   a) Examining the flash file system
   b) Saving an active image file as the default
   c) Deleting outdated files
   d) Querying the flash file system
   e) Optimizing the flash file system
2. File Upload
3. File Upgrade

The Switch Module and Remote Module units use image files with the "*.mab" extensions.

File Management

Examining the Flash File System

This procedure determines how many image files are on the flash file system.

Path: Gateway (Remote) ->Utilities->Upgrade->Image List

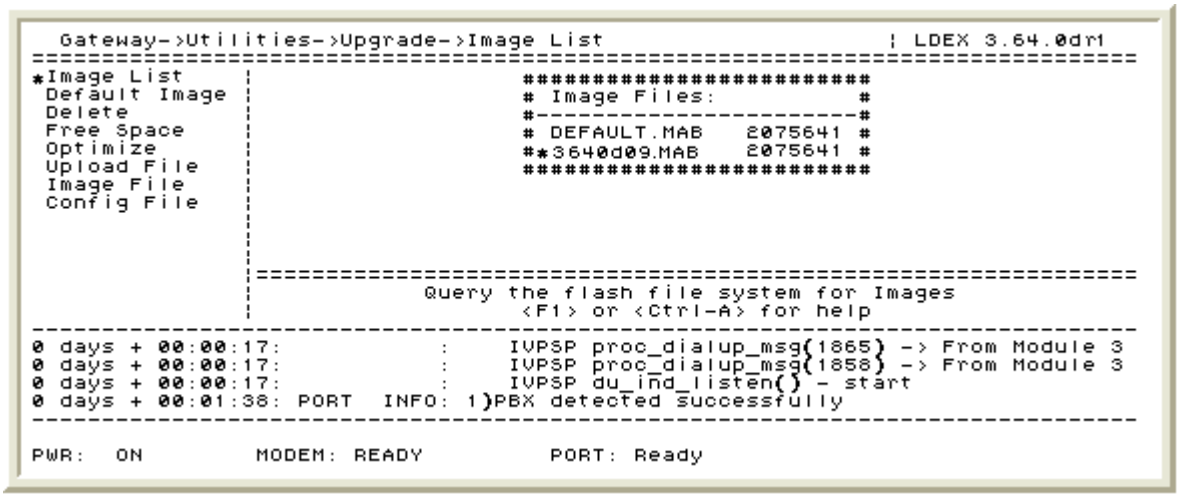

Figure 44: Image List

If "default.mab" is the only file displayed in the list, go to *Optimizing the Flash File System* on the next page. Otherwise follow the steps to save the active image file as the default.

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Saving the Active Image File as the Default

Saving the active image file as the default:

2. Deletes the existing "default.mab" file on the unit
3. Renames the image that is currently live to default.mab
4. A copy of the current live image remains on the unit after the upgrade is complete
5. If the currently live image is "default.mab" the message "Currently running default image" is displayed

This process requires the system to be rebooted and this will cause active phones to be taken out of service for a few minutes.

Path: Gateway (Remote) ->Utilities->Upgrade->Default Image

Type "[Y]es" to make the changes specified and reboot.

```
#############################################################
#                                                           #
# This will delete the existing /flash0/default.mab,        #
# rename /flash0/3640d09.MAB as the default image, and      #
# reboot the system. Change and reboot now?[y/n]            #
#                                                           #
#############################################################
```

Figure 45: Default Image

Querying Flash File System

Before loading your new image file into the Flash File System, ensure that there is enough free memory space for it. If the free space is less than 3,000,000 bytes, you must delete files which are not in used by the system (see *Deleting Outdated Files* on the next page).

Path: Gateway->Utilities->Upgrade->Free Space

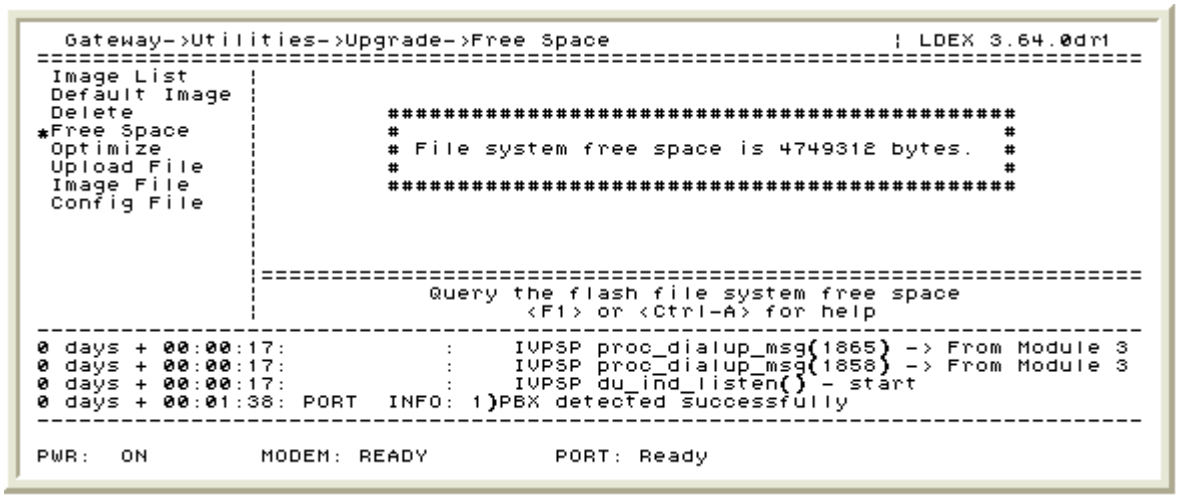
Gateway->Utilities->Upgrade->Free Space
LDEX 3.64.0dr1
Image List
Default Image
Delete
*Free Space
Optimize
Upload File
Image File
Config File
File system free space is 4749312 bytes.
Query the flash file system free space
<F1> or <Ctrl-A> for help
0 days + 00:00:17: IVPSP proc_dialup_msg(1865) -> From Module 3
0 days + 00:00:17: IVPSP proc_dialup_msg(1858) -> From Module 3
0 days + 00:00:17: IVPSP du_ind_listen() - start
0 days + 00:01:38: PORT INFO: 1)PBX detected successfully
PWR: ON
MODEM: READY
PORT: Ready

Figure 46: Free Space

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Deleting Outdated Files

You must delete all ".mab" files to ensure there is room for the new update file.

Path: Gateway->Utilities->Upgrade->Delete

All files not in use are listed – this does not include "default.mab" or the active image file. If these are the only files, a message is displayed stating that all files are in use.

Select a file to delete and press Enter. Type "[Y]es" to confirm that you want to delete the file.

Optimizing the Flash File System

Optimizing speeds up the subsequent file upload.

Path: Gateway (Remote) ->Utilities->Upgrade->Optimize

Do not optimize the flash file system when the unit is active. If the flash file is optimized while the unit is being used it may cause the flash file to become corrupt and render the units unusable.

Type "[Y]es" to optimize the flash file system.

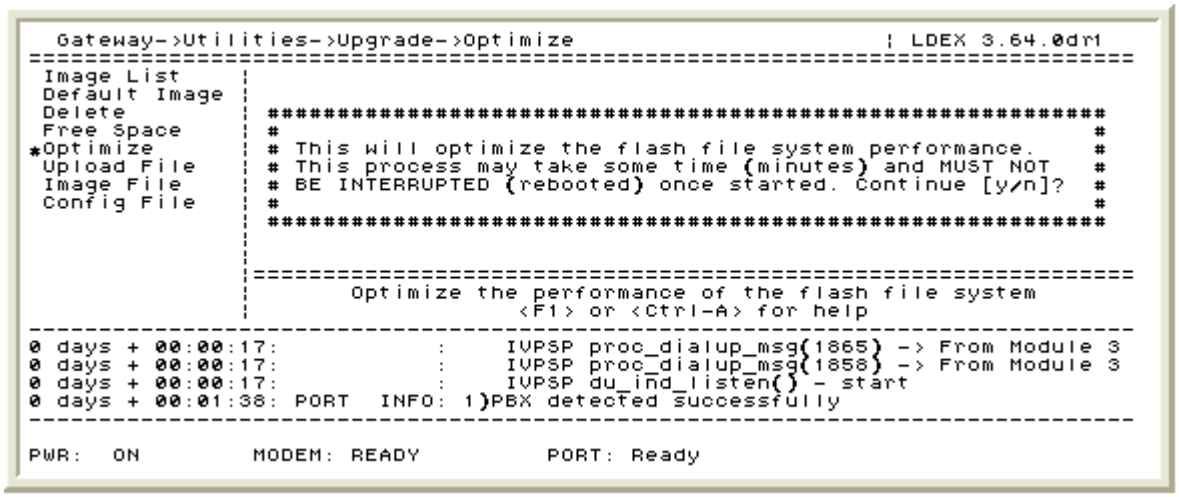
Gateway->Utilities->Upgrade->Optimize
LDEX 3.64.0dr1
Image List
Default Image
Delete
Free Space
*Optimize
Upload File
Image File
Config File
This will optimize the flash file system performance.
This process may take some time (minutes) and MUST NOT
BE INTERRUPTED (rebooted) once started. Continue [y/n]?
Optimize the performance of the flash file system
<F1> or <Ctrl-A> for help
0 days + 00:00:17: : IVPSP proc_dialup_msg(1865) -> From Module 3
0 days + 00:00:17: : IVPSP proc_dialup_msg(1858) -> From Module 3
0 days + 00:00:17: : IVPSP du_ind_listen() - start
0 days + 00:01:38: PORT INFO: 1)PBX detected successfully
PWR: ON
MODEM: READY
PORT: Ready

Figure 47: Optimize

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File Upload

Via FTP

Each unit must have Telnet and FTP enabled, and a valid IP address assigned before proceeding. To set up Telnet and FTP see the Switch Module's section and the Remote Module's *Advanced IP Parameters – LAN Address* section within this document.

To connect to the Switch Module or Remote Module unit using FTP:

1. On a PC running Windows XP, for example, go to the "Start" menu and select the "Run" application. Type "ftp" followed by the unit's IP address and click OK.

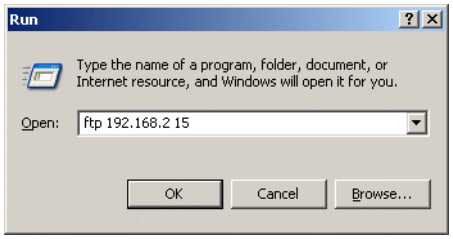

Figure 48: Windows "Run" Application

The following screen is presented:

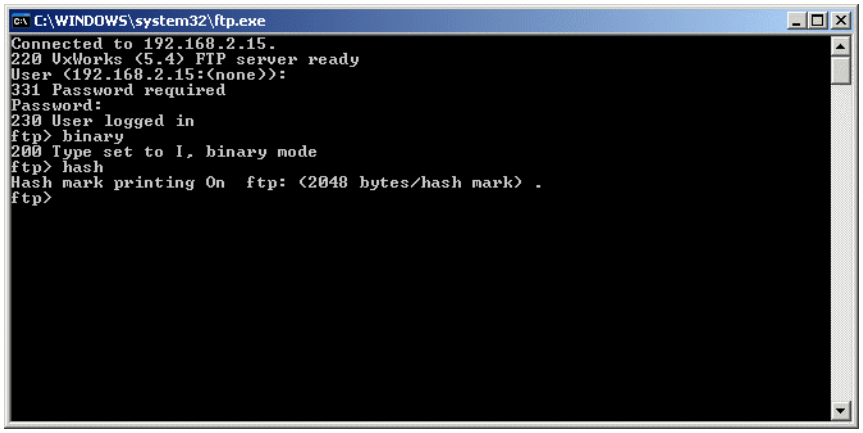

Figure 49: FTP session

2. Press Enter at the "User" prompt
3. At the "Password" prompt press enter if there is no password. If a password has been set enter the password followed by Enter.
4. At the "ftp" prompt type "bi" (binary) and press Enter
5. At the second "ftp" prompt type "hash" (for # marks to be displayed while loading the file)
6. At the third "ftp" prompt type:
   a) ftp <path to file>, where the "path to file" is the full path to access the file from the administrator's PC (i.e. c:\EXTender\Updates\3.64r2.mab)
   b) As the file is being transferred progress is indicated by a stream of "#" symbols presented across the screen. The entire file upload takes approximately 15 minutes.

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7. When the file transfer is complete the "ftp" prompt will be presented. Type "quit" and press Enter. The image may now be copied to multiple units if required. See the "Via In-Band Upload" section for details
8. The unit is now ready to upgrade to the new software image. See the *Upgrading the Software* section for details.

Via FTP Client

The Switch Module or Remote Module unit can act as an FTP client to download the image file from an FTP Server.

Each unit must have Telnet and FTP enabled and an accessible (pingable) IP address assigned before proceeding.

To set up Telnet and FTP see the Switch Module's *Advanced IP Parameters – Telnet and FTP* section and the Remote Module's *Advanced IP Parameters – Telnet and FTP* section within this document.

Path: Gateway (Remote) ->Utilities->Upgrade->Upload File->FTP Client

1. The ftp shell appears:

Figure 50: FTP session

2. At the "ftp" prompt enter:
   a) Dir xxx.xxx.xxx.xxx yyy zzz <path>, where:
   - xxx.xxx.xxx.xxx is the IP address of the ftp server
   - yyy zzz is the login user and password for the ftp server
   - <path> is the full path of the directory holding the image file

For example, dir 192.168.2.22 user1 pswd1 c:\EXTender\update

3. Press Enter to check that the image file with the ".mab" extension is available in that directory of the ftp server.

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4. Assuming that the file is present at the "ftp" prompt type:

   b) get xxx.xxx.xxx.xxx yyy zzz <path> <new file>, where:

   - xxx.xxx.xxx.xxx is the IP address of the ftp server
   - yyy zzz is the login user and password for the ftp server
   - <path> is the full path to the image file including the file name
   - <new file> is the name that the file is to be given on the flash file system

For example, get 102.168.2.22 user1 pswd1 c:\EXTender\update\3.61.5r1.mab 3.61.5r2.mab

3. Press Enter to download the image file to the unit. The file transfer begins and the transfer status is indicated by a stream of dots across the screen. The transfer should take approximately 15 minutes.
4. When file transfer is complete and the "ftp" prompt is displayed, press ESC to exit the FTP Shell.
5. The unit is now ready to upgrade to the new software image. See the *Upgrading the Software* section for details.

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Via Zmodem Console Upload

Files to be uploaded using the Zmodem protocol must have extensions ".mab."

1. Establish a direct serial connection to the unit.

Path: Gateway (Remote) ->Utilities->Upgrade->Upload File->Zmodem upload

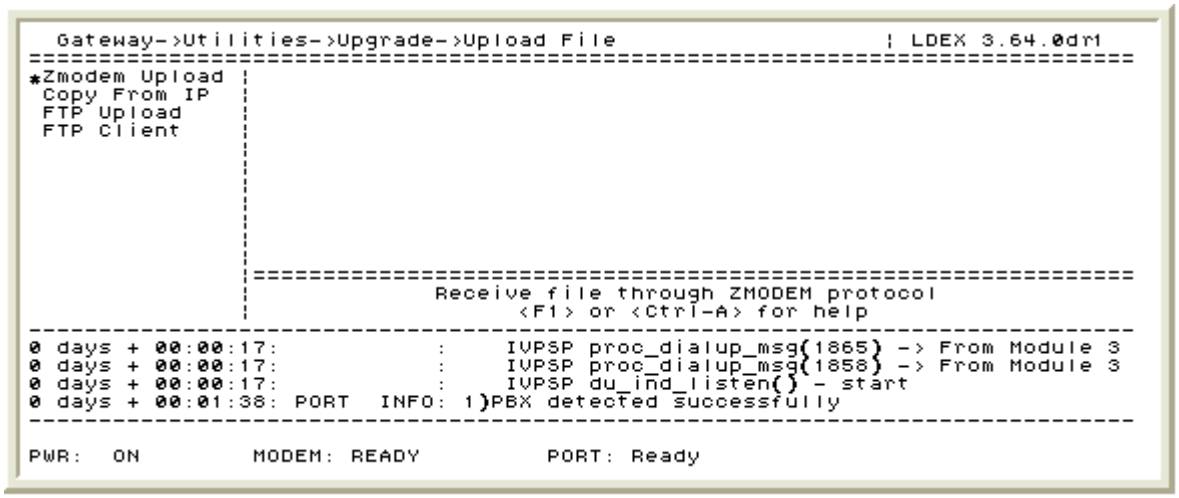
Gateway->Utilities->Upgrade->Upload File
LDEX 3.64.0dr1
*Zmodem Upload
Copy From IP
FTP Upload
FTP Client
Receive file through ZMODEM protocol
<F1> or <Ctrl-A> for help
0 days + 00:00:17: : IVPSP proc_dialup_msg(1865) -> From Module 3
0 days + 00:00:17: : IVPSP proc_dialup_msg(1858) -> From Module 3
0 days + 00:00:17: : IVPSP du_ind_listen() - start
0 days + 00:01:38: PORT INFO: 1)PBX detected successfully
PWR: ON MODEM: READY PORT: Ready

Figure 51: Zmodem Upload

2. Select "[N]o" when asked if you want to optimize (the flash file system was optimized in the file management process).
3. Press "[Y]es" to continue. A warning message is presented that you must not interrupt the upload process.
4. When you see the message "Starting Zmodem Session – Hit Ctrl-X 5 times to cancel the upload" go to the HyperTerminal menu bar and select "Transfer" and then "Send File."
5. Browse to the location of the file on your PC, highlight the file with the ".mab" extension and select "Open."
6. Make sure the protocol is set as Zmodem and press "Send" to begin the transfer.
7. Once the transfer has begun, HyperTerminal displays a status window indicating the progress of the upload and inform you when it has been uploaded successfully.
8. The unit is now ready to upgrade to the new software image. See the *Upgrading the Software* section for details.

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File Upgrade

This process requires the system to be rebooted and will cause active phones to be out of service for a few minutes.

Path: Utilities->Upgrade->Image File

1. Select the image file (the file you uploaded) and press Enter.
2. The image file is verified and if it fails an error prompt will be displayed on screen, similar to the one shown below. If this occurs, please re-start the Upgrade Process.

```
#########################################################################
#                                                                       #
# Unable to verify this image file, the master header                   #
# is unavailable or bad. It is recommended that you choose              #
# a different image file. Press enter to continue                       #
#                                                                       #
#########################################################################
```

Figure 52: Error Message

3. If file verification succeeds, you are asked to confirm that you want to change the image file to the file you have uploaded. Type "[Y]es" to continue.
4. A warning screen appears, as shown below. Type "[Y]es" to continue the upgrade process. This will use the selected image file and reboot the system.

```
#########################################################
#                                                       #
# Upgrading the image requires a system reboot.         #
#    WARNING: All connections will be lost.             #
#        Upgrade and reboot now? [y/n]_                 #
#                                                       #
#########################################################
```

Figure 53: Warning message

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APPENDIX A: TECHNICAL SPECIFICATIONS

Regulatory Approvals	
FCC	FCC 47 CFR Part 15, Subpart B, Class B FCC Part 68, Subpart D
Industry Canada	CS-03 Part 1 Issue 8
CE Mark	EU 60950-1 (01) EN 55022 (98) +A1 +A2 EN 55024 (98) +A1 +A2
Safety	CSA C22.2 No. 60950-1 (03) UL 60950-1 (03) IEC 60950-1 (00)
System Architecture	
CPU	Freescale MPC870, 66MHz
DSP	Analog Devices 2185N, 80 MIPS
MODEM	Silicon Laboratories SI2457 with Global DAA
Memory	
DRAM	8MB
Flash Memory	2MB
Interfaces	
Ethernet	RJ-45 10/100Mpbs Half/Full Duplex
Management	Serial RS-232, RJ45
Telephone	Custom cable supplied by Citel - RJ-45 on the end terminating to the EXTender 4100 and RJ-11 terminating to the telephone.
Voice	
Voice Compression	G.729A, G.711, G.726 (ADPCM32 and ADPCM24)
Protocols and Services	
LAN	RVP over Internet Protocol (IP)
Electrical	
Line Voltage	110-240V 50/60Hz
Environment	
Temperature	32° - 104° F (0° - 40° C)
Relative Humidity	5 to 95%
Dimensions	
Inches	6.3 in x 5.3 in x 1.4 in
Millimeters	160mm x 135mm 34.5 mm
Weight	
Grams	300g

Table 10: Technical Specifications

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APPENDIX B: REGULATORY AND COMPLIANCE

Compliance and Regulatory Statements

EN55022 and CISPR22 Statement

This is a Class B product.

FCC Part 15 Statement

This digital equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

FCC Part 68 Statement

Models E-1100A

Equipped with the Analog port, this equipment complies with Part 68 of the FCC Rules and the requirement adopted by ACTA of the United States.

On the product nameplate located on the bottom of the equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX.

If requested, this number must be provided to the telephone company.

Connection to the Telephone Line

This equipment uses RJ11C jacks for connection to the telephone line. You must, upon, request, provide the following information to your local telephone company: **USOC Jack type: RJ11C**.

This equipment cannot be used on the public coin telephone service provided by the telephone company. Connection to party line service is subject to state tariffs.

Your telephone company may discontinue your service if your equipment causes harm to the telephone network. They will notify you in advance of disconnection, if possible. During notification, you will be informed of your right to file a complaint to the FCC.

Occasionally, your telephone company may make changes in its facilities, equipment, operation, or procedures that could affect the operation of your equipment. If so, you will be given advance notice of the change to give you an opportunity to maintain uninterrupted service.

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The registration number of the system must be provided so that the telephone company can ascertain intended modes of operation and verification of the registration port.

If a need arises in the future the telephone company will call the user and request the following information for any equipment being connected to the Public Switched Telephone Network:

Manufacturer:	Citel Technologies
Model Number:	E-1100A. Refer to nameplate on the bottom of the unit
FCC Registration Number:	Refer to the nameplate on the bottom of the unit
Ringer Equivalence Number:	(REN): 0.1B
Facility Interface Code:	(FIC): 02LS2
Universal Service Order Code:	(USOC): RJ11C
Telephone plug(s):	RJ11

The Ringer Equivalence Number (REN)

The FCC Registration Label, found on the bottom of the unit, includes the REN. This number is a representation of the electrical load that will be applied to your telephone line once the unit is plugged into your wall jack. The telephone line serving your premises will not operate properly if the total ringer load exceeds the capability of the telephone company central office equipment. That is, if too many ringers (or their equivalent) are connected to the line, there may be insufficient energy to ring your telephones or activate other equipment. If the ringer load is excessive, you may also have difficulty dialing telephone numbers.

Problems, Repair and Warranty

Should you experience trouble with this telephone equipment or for repair or warranty information, please contact Citel Technologies, at 1-888-454-5828. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect this equipment from the line network until the problem has been corrected.

Industry Canada Statements

This digital equipment does not exceed Class B limits for radio noise emissions from digital apparatus, set out in Radio Interference Regulation of Industry Canada. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps necessary to correct the interference.

Models E-1100A

This product meets the applicable Industry Canada technical specifications.

When equipped with the Analog port, a Registration Number is printed on the product nameplate, located on the bottom of this equipment. This certification means that the equipment meets certain telecommunications network protective, operations, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

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Repairs to certify equipment should be made by a Citel Technologies, Inc. authorized maintenance facility. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice d'Industrie Canada

Cet équipement n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique établi par l'Industrie Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions de radio et de télévision, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Modéles E-1100A

Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada.

Quand la carte Analog est installée, un numéro d'enregistrement est indiqué sur l'étiquette du produit situé sous l'équipement. Ce numéro d'enregistrement du Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par Citel Technologies, Inc. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause d'un mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

L'utilisateur ne doit pas tenter de faire les raccordements lui-même, mais doit avoir recours à un service d'inspection d'installations électriques ou d'un électricien.

Indice d'équivalence de la sonnerie (IES)

L'indice d'équivalence de la sonnerie (IES : 0.1B) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

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Making Changes or Modifications

Any changes and modifications not expressly approved by Citel Technologies, Inc. will void any compliance and regulatory approval, and will void the user's authority to operate the equipment.

Protection of the Environment – The WEEE Directive

This equipment is marked according to the European directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

This symbol on the equipment indicates that this appliance may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of Electrical and Electronic Equipment.

Disposal must be carried out in accordance with local environmental regulations for waste disposal.

For more detailed information about treatment, recovery and recycling of this product, please contact your local city office or your household waste disposal service.

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APPENDIX C: SUPPORTED TELEPHONES

Avaya Definity	
2402	**8410DR**
2410	**8411**
2420	**8434DX**
6402+	**9410D**
6408+	**9040 TansTalk (Wireless Handset)**
6416D+	**CallMaster II**
6424D+	**CallMaster III**
8403	**CallMaster IV**
8405	**CallMaster V**
8410D	
Avaya Definity – *Add-on Modules*	
XM24	**EU24**
Avaya Magix	
4400	**4412D+**
4400D	**4424D+**
4406D+	**4424LD+**
Avaya Magix – *Add-on Modules*	
DSS 4450	

Table 11: Supported Telephones – *Definity and Magix*

Nortel Meridian	
M2006	**5. M3901**
M2008	**6. M3902**
M2216	**7. M3903**
M2616	**8. M3904**
M2616CT	**9. M3905**
	10.
Nortel Meridian – *Add-on Modules*	
NT2K22	**11. NTMN66**

Table 12: Supported Telephones – *Nortel Meridian*

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Nortel Norstar (BCM4.0, MICS7.1)	
M7100	**M7410**
M7208	**M7410CT**
M7308	**T7208**
M7310	**T7316**
M7324	**T7316E**
Nortel Norstar – *Add-on Modules*	
ATA2	**NT8B29**
NT8B41	

Table 13: Supported Telephones – *Nortel Norstar*

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APPENDIX D: GLOSSARY OF TERMS

A	
AC/DC	**Alternating Current / Direct Current – Refers to the unit's power supply (or a kickin' rock band from Australia!).**
ACTA	**American Carriers Telecommunications Association.**
Administrator	**The person responsible for configuring and/or maintaining the units.**
aLaw	**A companding algorithm, used in European digital communications systems to optimize the dynamic range of an analog signal for digitizing.**
Algorithm	**An algorithm is a mathematical function that is used to encrypt and decrypt information.**
Analog	**Analog refers to electronic transmission accomplished by adding signals of varying frequency or amplitude to carrier waves of a given frequency of alternating electromagnetic current. Broadcast and phone transmission have conventionally used analog technology. A modem is used to convert analog to digital information to and from your computer.**
B	
Bandwidth	**A measure of the capacity of a communications channel. The higher a channel's bandwidth, the more information it can carry.**
BAUD	**The rate of data transmission based on the number of signal elements or symbols transmitted per second. Today most digital signals are characterized in bits per second.**
Binary	**A numbering system with only two values: 0 (zero) and 1 (one).**
Buffer (Log)	**An amount of memory which temporarily stores data to help compensate for differences in the transfer rate of data from one device to another.**
C	
Carrier	**A carrier wave is a waveform (usually sinusoidal) that is modulated (modified) to represent the information to be transmitted. This carrier wave is usually of much higher frequency than the modulating signal (the signal which contains the information).**
Cascading Style Sheets	**A method of coding that allows administrators to define how certain HTML, DHTML, or XML structural elements, such as paragraphs and headings, should be displayed using style rules instead of additional markup.**
Character	**In computer terminology, a character is a unit of information that roughly corresponds to a written symbol, of a natural language, such as a letter, numeral, or punctuation mark.**
CODECS	**Codec refers to "Coder-Decoder," which describes a device or program capable of performing transformations on a data stream or signal.**

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Companding	**A type of signal processing in which the signal is compressed on input and expanded back to its original form on output. Digital companding allows a device to achieve a greater apparent dynamic range with fewer bits per sample word.**
Compression	**A technology that reduces the size of a file. Compression programs are valuable to network adminstrators because they help save both time and bandwidth.**
Console	**An interactive terminal connected to a computer or electronic system usually for the purposes of administration.**
D	
Daemon	**A program that runs unattended to perform continuous or periodic systemwide functions, such as network monitoring or control.**
dB	**A unit used to convey the intensity of sound.**
DB9	**On a PC, the serial port is a DB9 male connector. It has 9 pins arranged in two rows, with one row on top of the other.**
DHCP	**Short for Dynamic Host Configuration Protocol, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. DHCP also supports a mix of static and dynamic IP addresses.**
Dial Tone	**This sound signifies that a telephone is ready to receive instruction (i.e. make a call).**
Digital Phones	**A telephone that uses signaling rather than pulses (as in an analog phone). Most PBXs/KTSs use digital phones as the user interface.**
Domain Name	**A domain name is the text name corresponding to the numeric IP address of a computer on the Internet.**
DTMF	**Dual Tone Multi-Frequency; better known as a Touch Tone. The tones generated by touching the keys on the phone are used for a variety of purposes including voice mail systems and voice messaging.**
Duty Cycle	**In an ideal pulse train (one having rectangular pulses) it's the ratio of the pulse duration to the pulse period.**
E	
Echo	**An interference present on telephone circuits in which transmitted signals are reflected back to the source from the terminating end. This is usually overcome by the telephone company by the installation of echo suppressors in the transmission path which absorb the echo when each party is talking.**
EXTender	**A communications solution offered by Citel Technologies that allows for seamlessly connecting remote offices to the corporate PBX or KTS. The EXTender resides at the remote site.**
Extensions	**A telephone extension is an internal telephone line attached to a PBX or KTS.**
ETI	**The Ensemble Transport Interface. The uni-directional transport protocol used for the internal network distibution of DAB (Digital Audio Broadcast) channel broadcasts**

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F	
FCC	**Federal Communications Commission - The FCC has the authority to regulate all interstate communications originating in the United States.**
Free Space	**Free space in a storage device. The space that in any given time does not belong to any file or the file system itself (system information). New files will be stored in the free space area.**
Firewall	**A firewall is either the program or the computer it runs on, usually an Internet gateway server that protects the resources of one network from users from other networks. Typically, an enterprise with an intranet that allows its workers access to the wider Internet will want a firewall to prevent outsiders from accessing its own private data resources.**
Flash (File)	**Flash memory is a non-volatile memory device that retains its data after the power is removed.**
Flow Control	**The way in which information is controlled in a network to prevent loss of data when the receiving buffer is near its capacity.**
FTP	**File Transfer Protocol - A very common method of moving files between two network devices. FTP is a way to login to another network device for the purposes of retrieving and/or sending files. FTP was invented and in wide use long before the advent of the World Wide Web and originally was always used from a text-only interface.**
G	
G.165	**The ITU G.165 Recommendation was initially developed to standardize echo canceller performance and ensure network interoperability.**
G.729A	**G.729 is an audio data compression algorithm for voice that compresses voice audio in chunks of 10 milliseconds. Music or tones such as DTMF or Fax tones cannot be transported reliably with this codec, and thus use G.711**
H	
I	
Image	**Refers to the currently configured software file.**
Impedance	**A measurement of resistance to current that a transmission medium offers. It is measured in ohms.**
Interface	**The hardware and software that enables electronic devices to share information.**
IP	**Internet Protocol, often-used abbreviation for TCP/IP.**
IPX	**Internetwork Packet Exchange (IPX) is a networking protocol from Novell that interconnects networks that use Novell's NetWare clients and servers.**
J	
JavaScript	**JavaScript is a script language - a system of programming codes, created by Netscape that can be embedded into the HTML of a web page to add functionality.**

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Jitter	**Jitter is the deviation in or displacement of some aspect of the pulses in a high-frequency digital signal. As the name suggests, jitter can be thought of as shaky pulses. The deviation can be in terms of amplitude, phase timing, or the width of the signal pulse.**
K	
KTS	**Key Telephone System. A private telephone system requiring manual selection of outside lines.**
L	
LAN	**A local area network (LAN) is a computer network covering a local area, like a home, office or small group of buildings such as a college.**
LCD	**Liquid Crystal Display – the graphical display available on some digital phone types.**
LED	**Light emitting diode (status indicator).**
Log	**Holds the call processing information generated by system activity.**
M	
MB	**Management Browser is used to install and configure the Switch Module and Remote Module.**
MC	**Management Console is used to install and configure the Switch Module and Remote Module.**
MIB	**Management Information Base** **When SNMP devices send SNMP messages to the management console, it stores information in this file or database. The MIB collects and contains information on managed objects.**
N	
Nodes	**Devices on a network that demand or supply services or where transmission paths are connected. Node is often used instead of workstation.**
O	
Optimization	**The process of improving the application's performance.**
P	
Packet Loss	**The discarding of data packets in a network when a device is overloaded and cannot accept any incoming data at a given moment.**
Packet Size	**The number of bytes contained in a single network packet.**
Parity	**A binary digit appended to an array of bits to make the sum of all the bits always odd or always even.**
Password	**A series of characters that enables someone to access a file, computer or program.**
PBX	**Private Branch Exchange (circuit switched telephony server).** **A telephone switch for use inside a corporation. It connects offices (internal extensions) with each other and provides access (typically by dialing an access number such as 9) to the public telephone network. PABX is the preferred term in Europe.**

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Switch Module	**A communications solution offered by Citel Technologies that allows for seamlessly connecting remote offices to the corporate PBX or KTS. The Switch Module or Switch Module resides at the corporate site.**
PC	**Personal Computer - A computer designed for use by one person at a time.**
Ping	**Packet Internet Groper. A utility that forwards data packets to check the quality of a link or verify the connection of a machine to the Internet.**
Port	**An interface through which data is sent and received.**
Protocol	**Rules controlling data flow in a communications system.**
PSTN	**Public Switched Telephone Network. The traditional, wired telephone network.**
Q	
R	
Reboot	**To reinitialize the execution of a program by repeating the initial program load (IPL) operation.**
Release Notes	**Citel issues Release Notes for each version of the Switch Module and Remote Module – these notes include information about new features, and also about any known issues.**
Remote	**The Remote. A communications solution offered by Citel Technologies that allows for seamlessly connecting remote offices to the corporate PBX or KTS. The Remote resides at the remote site.**
RF	**Radio Frequency electromagnetic radiation which is emitted by electrical circuits carrying rapidly changing signals, as a by-product of their normal operation, and which causes unwanted signals (interference or noise) to be induced in other circuits.**
RJ11	**A standard connector that is used to connect to the telephone line.**
RJ45	**An eight-wire jack used with Cat5 cable and Ethernet cabling.**
RS232	**RS232 is an electrical signaling specification published by the Electronic Industries Association (EIA). Although not identified in the specification, the 25-pin (DB25) connector, with specific pin assignments, is commonly accepted as "the RS232 connector or the serial connector."**
Router	**A device or setup that finds the best route between any two networks, even if there are several networks to traverse. Like bridges, remote sites can be connected using routers over dedicated or switched lines to create WANs (Wide Area Networks).**
Rx	**Received signal**
S	
Serial (connection)	**A link between systems or resources in which only one channel is active at one time carrying a single bit stream.**
Server	**A computer that delivers information and software to other**

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	computers linked by a network.
Static Routes	**Are used by a system that does not implement adaptive routing. In these systems routes through a data network are described by fixed paths (statically). These routes are usually entered into the router by the system administrator.**
Subnet Mask	**The subnet mask is used to determine where the network number in an IP address ends and the node number in an IP address begins.**
T	
TCP/IP	**Transmission Control Protocol / Internet Protocol** **The open computer network communications standard upon which the internet, and internet telephony, is based. Often abbreviated to IP.**
TCP/UDP	**Network Ports**
Teleworker	**A work arrangement in which employees enjoy limited flexibility in working location and hours. In other words, the daily commute to a central place of work is replaced by telecommunication links.**
Telnet	**A standard Internet protocol for accessing remote systems.**
Trunks	**The telephone lines connected to the PBX or KTS.**
TMI	**The Telephone Management Interface (TMI) is used to install and configure the Remote Module via phone menus.**
Toll (Near Toll)	**The voice quality resulting from the use of a nominal 4-kHz telephone channel.**
Tx	**Transmitted signal**
U	
uLaw	**A companding algorithm, used in North American digital communications systems to optimize the dynamic range of an analog signal for digitizing.**
V	
VT100	**Originally, a video display terminal manufactured by the Digital Equipment Corporation. It is now the most commonly supported plain text terminal type used for network connections.**
W	
Web Server	**A computer, including software package, that provides a specific kind of service to client software running on other computers. More specifically, a server is a computer that manages and shares web based applications accessible anytime from any computer connected to the Internet.**
WEEE	**The European Community directive on waste electrical and electronic equipment which, together with the RoHS Directive, became European Law in February 2003, setting collection, recycling and recovery targets for all types of electrical goods.**
X	
Y	

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Z	
Zmodem	**The fastest and most popular file transfer protocol, due to its efficiency and crash recovery properties.**

Table 14: Glossary of Terms

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